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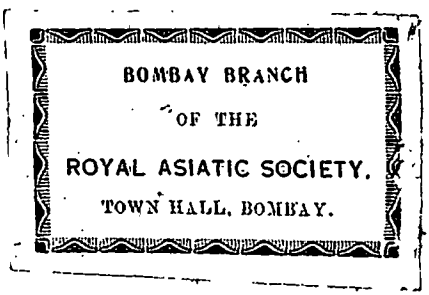

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THE WORKS

OF

SIR THOMAS BROWNE.

INCLUDING

HIS UNPUBLISHED CORRESPONDENCE,

AND A MEMOIR.

93677

EDITED BY SIMON WILKIN, F.L.S.

VOL. II.

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Decemb 2 1679

In the name of God Amen. I Thomas Browne Knight and Dr of physick of the citty of Norwich do make this my last will and testament Imprimis I give and bequeath unto my dear wife Dame Dorothie Browne all my Lands Leases and tenements all my bonds bills moueables, money plate Jewells and all my goods whatsoeuer Kewly to Saue a prouision for herself and make liberall maintenance and portions for my dear daughters Elizabeth Browne and Frances Browne Excepting such Lands and tenements as were assigned and made ouer unto my sonne Edward Browne upon mariage and to bee entred upon ay eare after my decease I am I appoynt and make my wife Dame Dorothie Browne my sole Executrix and give her power to sell all Leases all my goods moueables money plate Jewells lands and all goods valuable whatsoeuer for the prouision of herself and of my daughters Elizabeth and Frances Browne and for the payment of my debts Legaies and charitable gifts wherewith she is fully acquainted and will I doubt not performe my will herein And if it shall please god that my wife dame Dorothie should dye before mee then I make my daughters Elizabeth and Frances Browne my Executrixes and give them the same to enioyment & power in my estate as I haue before given unto my wife dame Dorothie This is my last will and testament which I haue writ with my owne hand confirmed it with my hand and seale.

witnesses

Thomas Browne

Nerzo Bickerdike

Anthony Mingay

Ang: Bryant

Religio Medici.

FIFTEENTH EDITION.

WITH COPIOUS NOTES,
PARTLY SELECTED FROM THOSE OF THE GERMAN AND DUTCH EDITORS, AND FROM THE "ANNOTATIONS" OF KECK, AND PARTLY ORIGINAL,

TO WHICH ARE ADDED

SIR KENELM DIGBY'S OBSERVATIONS.

ORIGINALLY PUBLISHED IN

1642.

EDITOR'S PREFACE

TO THE PRESENT EDITION.

When and where RELIGIO MEDICI was written—Surreptitiously printed in 1642—Two impressions of that edition in the same year—Authorized edition of 1643—*Observations by Sir K. Digby—Ross's Medicus Medicatus—Annotations on the obscure Passages*—Supposed author of the *Annotations*—Subsequent Editions of Religio Medici—Translations into Latin, Dutch, French, German, &c.—Present edition—Imitations and Works with a similar title.

So few particulars have been transmitted to us of the earlier years of Sir Thomas Browne's life, that it is not easy to determine precisely at what period he composed his Religio Medici, or where he resided at the time. Dr. Johnson seems to have supposed that it was written in London;—but internal evidence exists to disprove this. Dr. Watson, in his History of Halifax,[1] mentions that "he was said to have fixed himself, as a physician, in his juvenile years, in the parish of Halifax, and to have written his Religio Medici, in 1630,[2] at Shipden-Hall, near Halifax." This date, however, must be incorrect:—he did not receive his diploma till 1633, and can scarcely, even in common parlance, be said to have fixed himself in any place as a physician, three years before that event. Besides, the period named is otherwise disposed of in the accounts we have of his life;—for some time after he took his degree of master of arts (June, 1629), he is said to have resided in Oxfordshire, and thence to have proceeded on his travels, first in Ireland, with his father-in-law Sir Thomas Dutton, and afterwards on the continent, till 1633, when he received his degree of Doctor of physick at Leyden, just before his return. His residence near Halifax, then, must be sup-

1 Watson (Rev. John) History and Antiquities of the Parish of Halifax, in Yorkshire, 4to. Lond. 1775, p. 458.

2 Wright says, "*About* the year 1630, he lived at Shipden Hall, &c." *Antiquities of the Town of Halifax, in Yorkshire.* Leedes: 1738. 12mo. p. 152.

posed subsequent to his return; and, as it is clear from several passages in Religio Medici that it was written, also, after his travels, we may perhaps safely venture to assign the same period to both;—and conclude that he composed this celebrated treatise, in the seclusion of Shipden-Hall, as a relaxation in the intervals of his professional occupation in that neighbourhood, between the years 1633 and 1635;—after his wanderings had terminated, and some time before his residence at Norwich commenced.

There seems no sufficient reason to question the sincerity of Browne's declaration, that this piece was composed for his private exercise and satisfaction, and not intended for publication. Some years had elapsed since its completion—and his attention very probably was already occupied in collecting materials for a larger undertaking—when the appearance, in 1642, of an anonymous and surreptitious edition of his first work, together with the notice it attracted from the Earl of Dorset and Sir Kenelm Digby, determined him to acknowledge and revise it for the press. Johnson, in his notice of this circumstance, seems to suspect the author (though he professes to acquit him) of having contrived the anonymous publication of the work, in order to try its success with the public; observing, (in allusion to the author's complaint that the "broken and imperfect copy" he had lent had suffered "by frequent transcription,") that "a long treatise, however elegant, is not often copied by mere zeal or curiosity." No one, however, acquainted with Browne's character would hesitate to repel this insinuation:—it cannot for a moment be admitted that he was capable of using such means to obtain literary fame;—and certainly, if he had, he would not have risked his character on an edition so incorrect as to deserve immediate suppression. In reply to the alleged improbability of transcription, may be pleaded the fact, that there is ample proof of the work having been *repeatedly* transcribed, *while in manuscript*:—two complete copies are in my own possession;—a third exists in the Bodleian, and part of a fourth in the British Museum:—*none of them transcripts of an existing edition.* One of these *(MS. W.)*, though so nearly approaching the edition of 1642, as to lead to the belief that they had

a common origin, is clearly not a copy from it: *MSS. W. 2* and *R.* differ from it still more widely, but resemble each other sufficiently to be considered as the descendants of a second original manuscript: the other *(MS. L.)* unfortunately is a fragment, but it is interesting, both as possessing a date three years earlier than the spurious edition (1639), and as containing some curious variations from every other manuscript and edition.[3] I am, therefore, perfectly satisfied that Sir Thomas Browne had several originals written by his own hand, differing from each other. This opinion is confirmed,—by the information of those who knew him, "that it was his constant practice to make repeated copies of his compositions,"—as well as by an examination of his remaining manuscripts. There are, in his common-place books, many pages occupied by

[3] A brief description of these *MSS.* follows.—*MS. W.* is in foolscap 8vo. 83 pp. beautifully and closely written in a very small hand, the poetry and italics in a taller, Italian hand:—about 40 lines in a page. It has the title "*Religio Medici,*" in the same hand.

MS. W. 2. is in 4to. pp. 186:—written in a much larger hand—and originally without title.—In a different hand, at the head of the first page, is *Religio Medici*: and the following notice, in the same hand, occupies the preceding fly-leaf:—

Relligio Medici.
Authore Medico quodam Anonymo, Anglo, vel Scoto, incertum.

Authorem hunc fuisse natione Scotum perhibent rumores quorumdam eiusdem gentis qui libellum hunc cuidam magnati Anglo loco muneris obtulerunt. Præterea, character genij & morum scriptoris in hoc eodem opere expressus non alium fuisse Scotum suadet quam Doctorem Read medicum Londinensem, hominem non ignotum, aut ignobilem, lectorem [or, as it is written on a slip of paper pasted over the last three words, *nec ignobilem, sed prælectorem*] *Anatomiæ in eadem civitate, atq. non ita pridem, defunctum, nimirum, a° Aeræ Christianæ* 1641. *Cæterum, ex aduerso, linguæ Anglicanæ exquisita facundia ab omnibus Scotismis libera, tam in versu quam in oratione soluta, prodit authorem esse Anglum; atq. hoc ipsum confirmatur ex ea quod se doctrinæ Ecclesiæ Anglicanæ addictissimum &, quasi iuratum profitetur, quorum, tamen, neutrum in homine Scoto facilè reperies: ob quas causas Anglum fuisse verosimilius iudico, & confirmatur, tandem, hæc nostra coniectura oculato teste et omni exceptione maiori, ita vt deinceps fas amplius non sit ea de re, vel minimum, dubitare, quod autem ad nomen Authoris attinet, cum satis cognitum sit, id suo tempore adijcere constituimus.*

From this *MS.* note, it is evident that the work was widely circulated while in manuscript, some years earlier than 1641: or it could not have been attributed to Dr. Read, who died in that year.

MS. R. is in 4to. (very similar to the preceding,) preserved in the Rawlinson Collection, at the Bodleian, and having the following note in the Dr's. hand:—"*This Copy of the Religio Medici by Sir Thomas Browne, Kt. is very different from all printed.*"

MS. L. is a copy, preserved in the British Museum, among the Lansdowne *MSS.* (No. 489) of the first Eighteen Sections. It has not the title, but "*Mr. Browne, συν θεῷ* 1639," at the beginning.—It differs very much from all the others.

passages, which, with slight variations, occur in his printed works—especially in Hydriotaphia, Quincunx, and Christian Morals,—besides several of the Tracts entire, and of the Brampton Urns two copies, both differing from the printed copy. There is sufficient evidence too, that he was very willing to lend out his works, in manuscript; and some of his lesser pieces were even composed at the request of his friends and for their use. It is therefore easily to be supposed that one of those copies of Religio Medici, which he had lent, found its way "without his assent or privacy," to the press.

When the work had thus unexpectedly made its appearance, it must have struck the author that his name would in all probability be speedily connected with it:—at the same time, its reception (though under the disadvantage of gross inaccuracy) was so flattering, that he probably felt little hesitation in determining to anticipate discovery by avowal, and thus secure to himself the credit and advantage of the work, together with the power of giving it such revision as he wished. In doing this, it was undoubtedly his object, not only to correct the clerical and typographical errors with which the spurious edition abounded, but to modify or expunge certain passages not suited to the temper of the times, or which his more cautious feelings, or altered opinions, made him wish to suppress: he was desirous, also, of making such additions as might justify his having called the former copy "broken and imperfect." In short, he wished to supersede, and altogether to disown, that edition, and in all probability took care to remove every trace of its original;—for scarcely a fragment of the work remains amongst the Manuscripts he has left. But while the edition of 1643 is to be regarded as that which he intended for the public eye—I am persuaded, from comparing the alterations, additions, and omissions it exhibits, with the Manuscripts and surreptitious editions, that these not only have an *equal* claim to rank as his composition, but that they *alone* must be considered to exhibit the work *as originally composed* "for his own private exercise and satisfaction." In all the manuscript copies are to be found, without exception, those passages of the surreptitious edition which have been omitted in that of 1643, but not one of the numerous additions

nor of the most important alterations it contains.—Now, as it has been shown that those manuscript copies most probably represent three distinct originals, their remarkable agreement with the surreptitious edition, where it differs from the genuine, strongly favours the opinion that the latter was not printed from an existing and more perfect manuscript, but from a copy then first prepared, for the express purpose of publication.—The former, in short, contains his private soliloquies, the latter his published opinions.

In the mean time, the surreptitious edition appears to have been rapidly sold, and a second impression of it was printed. Neither of these has a printed title-page, but both have an engraved frontispiece, by Marshall, representing a figure, which a hand from the clouds has caught by the arm, in the act of falling from a rock into the sea; the motto *à coelo salus* is engraved by the side of the figure, and *Religio Medici* below it: at the foot of the plate, *Printed for Andrew Crooke*, 1642. *Will. Marshall scu.* Both impressions are in very small octavo; the one has 190 pp., the other 159 pp.;—the latter has a larger page of type, but is much more accurately and better printed, and probably is the later of the two. These impressions are extremely rare, especially the former, of which my copy is the only one I have seen. In some of the following notes, it is mentioned as *Ed.* 1642, *W.*—the other, as *Ed.* 1642, *C.*

Whether the engraved frontispiece had any other origin than the fancy of Marshall the engraver, it is difficult to say, but it seems to have pleased that of Browne; for it appears at the head of his first, and has accompanied every subsequent, edition. The author's frontispiece however differs from the former, in not having *Religio Medici* in the middle of the design, nor the engraver's name; it has at foot the following words;—*A true and full copy of that which was most imperfectly and surreptitiously printed before under the name of Religio Medici. Printed for Andrew Crooke*, 1643. In a perfect copy of this edition in the Dean and Chapter's Library of Norwich, the frontispiece is followed by 4 pp. *To the Reader;*—then the work, 183 pp. then Letter to Digby, his reply, and the notice signed A. B. and finally, "Errata;" together 190 pages. It is in very small 8vo.

In the same year appeared, *Observations upon Religio Medici, occasionally written by Sir Kenelome* Digby, Knight;* printed in the same size, and containing 124 pages. A second edition came out in 1644: the third was published, in 1659, with the fifth edition of Religio Medici, to which work it has ever since been appended, though written with reference to the surreptitious edition.

In 1645, that remarkable personage, Alexander Ross, made an attack on both parties, in his *Medicus Medicatus: or the Physician's Religion cured, by a lenitive or gentle Potion: with some animadversions upon Sir Kenelme Digby's Observations on Religio Medici.* pp. 112. very small 8vo. The work is dedicated "To my worthy and ever honoured friend, *Mr.* Edward Benlowes *Esquire.*" Browne's too great lenity towards Papists, his too free use of "rhetorical phrase" in religious subjects, his apparent leaning to judicial astrology and other *heresies,* and the far too measured terms in which he questions certain opinions which Ross roundly condemns,—form the general subject of his remarks; which, though often absurd, and sometimes ludicrous, are by no means devoid either of spirit or shrewdness,—though not remarkable, it must be confessed, for candour. In his animadversions on Sir Kenelm, which constitute a third of his book, he chiefly attacks the metaphysicks of the knight and his Catholicism. Some curious proofs of Ross's belief in certain of the vulgar superstitions of his day will be found in the notes, at pp. 132 and 133. The work, however, was not called into a second edition; nor did it provoke any other reply from Dr. Browne, than a fresh edition of his Religio Medici, in that year, 1645; which differs from the first only in having the last figure of the date altered in the plate, and the correspondence with Digby placed before instead of after the work:—it has 188 pages. It is the second authorized edition, but should rather be considered the Fourth edition.

Among the editions of Religio Medici enumerated by Dr. Watt, in his invaluable work, *Bibliotheca Britannica,* is one dated 1648; but I have never been able to meet with it, and

* An error undoubtedly;—the letter is signed, "*Kenelme* Digby."

am inclined to believe that the work was not reprinted till 1656, when the "fourth" edition came out. This is the first with a printed title-page in addition to the frontispiece, which is retouched, and has the words "*Fourth Edition*" added. But it was only the *Third* of the authorized editions, unless there was one between 1645 and 1656; if there was not, the surreptitious editions must have been included, but reckoned as one. In the present enumeration it is called

The Fifth Edition. It is in very small 8vo., and the title-page as follows:—*Religio Medici. The Fourth Edition, corrected and amended, with Annotations, never before published, upon all the obscure passages therein. London: Printed by E. Cotes for Andrew Crooke, at the Green-Dragon in Paul's Church-Yard.* 1656: after 16pp. of Prefaces, &c., and 174 pp. of the work, follows another title-page;—*Annotations upon Religio Medici, &c.* then, 175—184, *The Annotator to the Reader:* and the *Annotations,* pp. 185—208.

There seems good reason to suppose that the *Annotations* were written by a Mr. Thomas Keck of the Temple. In the Bodleian* there is a copy of the Edition of 1643, which has his name on the cover, together with this memorandum, "*MS. Notes by Mr. Keck of the Temple.*" Brief marginal remarks are scattered through the volume, at many of those passages on which there are "Annotations," and the same authorities are referred to. There is also in this volume a very neat manuscript title, thus;—*Religio Medici. The Second Edition, corrected and amended, with Annotations never before published upon all the obscure passages therein, by T. K. London; Printed for A. Crooke,* 1654: this agrees exactly, except the initials, with the title actually printed. He probably wrote his *Annotations* in the year 1644, using this very copy;—for he says in the preface, (which bears the same date as the manuscript title,) "that these notes were collected ten years ago." There is also still further coincidence: Mr. Keck was a lawyer; and the annotator, speaking of his profession, says, "I declare myself that I am *causarum actor mediocris.*" So that, on the whole, there seems sufficient evidence to leave

* Bibl. Bodl. Rawlinson. 8vo. 675.

little reason for hesitation in announcing him as the author of the *Annotations.*

The Sixth Edition is the first that was published in conjunction with the other works. It accompanied the Fourth Edition of Pseudodoxia Epidemica, fol. 1659, and is printed in double columns. It contains neither the Annotations, nor Digby's Observations, nor the correspondence respecting them. It is called in the title-page, *The Last Edition, corrected and enlarged by the Author; Printed for the good of the Commonwealth:* and contains 34 pp. with title and preface.

The Seventh Edition. *Religio Medici. The Fifth Edition, corrected and amended. With Annotations, &c. Also Observations by Sir Kenelm Digby, now newly added. London, Printed by Thomas Milbourn for Andrew Crook, at the Green Dragon in Pauls Church-yard,* 1659;—small 8vo., 283 pp. This edition has a newly engraved frontispiece, date 1660.

The Eighth Edition is dated 1669, and is called the *Sixth.* But I have never been fortunate enough to obtain a copy, nor any other description of it than the following brief note in the hand-writing of its proprietor, since dead; *Religio Medici —6th Edit.* 1669. It is in small 8vo.

The Ninth Edition is with *Pseudodoxia Epidemica, &c. the Sixth and last Edition,* 4to, 1672 ; and is called *The Seventh Edition; London. Printed for Andrew Crooke.*

The Tenth Edition. *Religio Medici. The Seventh Edition, corrected and amended. With Annotations, &c. Also Observations, &c., London, Printed for R. Scot, T. Basset, J. Wright, R. Chiswell,* 1678 : small 8vo., pp. 374, and 20 pages, not numbered, of Prefaces, &c. The frontispiece has the number of edition and date altered, and the words *for Andrew Crooke* erased, and *at London* substituted.

The Eleventh Edition is precisely a reprint of the Tenth—except that it is called *The Eighth Edition,* and dated 1682. My copy wants the frontispiece. This was probably the last edition published during the author's life. He died towards the close of the same year.

The Twelfth Edition forms part of the collective edition of the Works, edited by Archbishop Tenison, fol. 1686. It is singular that he should have taken so little pains to ascer-

tain how many editions had actually appeared, as to allow this to be called *The Eighth Edition.* It is dated 1685, and comprises, with the Correspondence, Annotations and Digby, 116 pages.

The Thirteenth Edition. *Religio Medici. By Sir Thomas Browne, Knight, M. D. A New Edition, corrected and amended, with Notes and Annotations, never before published, upon all the obscure passages therein. To which is added, The Life of the Author. Also Sir Kenelm Digby's Observations. London, Printed for J. Torbuck, &c.,* MDCCXXXVI. 12mo. pp. 260, and xxxvi pp. of title, correspondence, and life. It has a newly engraved and much larger frontispiece. This is the first edition with a *Table of Contents.* A new title-page was in 1738 attached to the unsold copies of this edition, in which it is called the *Eleventh Edition.* This title-page has a table of contents in double column.

The Fourteenth Edition was published in the same year as the preceeding, 1736, in 8vo. but without notes. I have never seen it.

The foreign editions may next be mentioned.—The edition of 1643 was translated into Latin by John Merryweather,[4] and printed at Leyden, in 1644, by Hackius, who published a second edition of it in 1650:—the former I have never seen; the latter is a very neatly printed volume, in very small 12mo. 240 pp. with engraved title only, representing the same figure as the English editions, and at foot, *Lugd. Batavorum, apud Fran. Hackium. Ao.* 1650:—the last two figures altered. The translator visited Norwich for the purpose of seeing the author, and presenting him a copy of this second edition,—as will be seen by a reference to his life.

This translation was reprinted, at Paris, with only the usual frontispiece-title, *Religio Medici. Juxta Exempl. Lug. Batavorum,* 1644;—same size,—178 pp.—In this reprint, the author's and translator's prefaces are omitted, and one substituted, in which great anxiety is shown, not only to vindi-

[4] *John Merryweather.*] "He was of Magdalen College, Cambridge, and became B. D. before 1652, in which year is dated, *Some Short Directions for a Student in the University,* a MS. in the Bodleian." *Wood's Athenæ,* Ed. *Bliss,* iv, 57, *note.* He was the author of *Directions for the Latin Tongue, by the translator of Religio Medici. Lond.* 1681. See *Johnson's Life of Sir Thomas Browne.—Ed.*

cate the author from the charges of impiety, scepticism, and even atheism, with which he had been assailed, but to prove, from several passages of his work, that he did not even deserve the character of a *heretic*:—that he was a member of the Church of England from dire necessity alone, but in heart a *Roman Catholic*:—"*ad sectam Anglicanam per vim malignam nativitatis aut fortunæ præter voluntatem advectum.*" It is remarkable that the French verses, in § IV. Part 2, are omitted, and a blank is left in the middle of the page.—Our copy of this rare little volume has been "*Ex libris Monast. Juliani Turonens.*" But, notwithstanding the arguments of the preface, we find the fatal epithet "*hæreticus,*" written at the foot of the engraved title.

In 1652 appeared, at Strasburg, an edition of Merryweather's translation, in small 8vo. 494 pp. in which the text is absolutely buried beneath a mass of Latin notes, by a German, named Levinus Nicolas Moltkenius (Levin Nicol von Moltke). In this edition the Parisian preface is inserted, in order to shew that, even by Roman Catholics, the author was acquitted of those gross errors of opinion with which some had charged him. The author rejoices that he was not "*Puritanismo addictus, aut turpitudine independentium errorum fœdatus:*" and excuses his various speculations, on account of the modesty with which he advances them. The edition was reprinted in 1665 and 1677.

In 1665 a Dutch translation was printed at Leyden, in very small 12mo. containing 365 pages, and 14 of title, preface, &c. It has a spirited copy of the usual cut. This translation, together with its notes,[5] was translated into French and published in 1668, in same size, without name of place. M. du Petit Thouars, in the Biographie Universelle, attributes the French version to Nicholas Lefebvre, and says it was printed at La Haye. Who was the Dutch translator may be questioned. Several continental bibliographers call him Johan Gründahl; but there occurs a note, evidently by the translator, signed J. R. which is mentioned at page 74 of the present edition. In his preface he mentions having met Sir Thomas Browne

5 In the present edition some of these notes are given, under the erroneous signature of *Fr. Tr.*

at Vorburg, at the house of a friend, and having then been recommended by the author to read his work. Of this visit to the continent, which must have taken place during his residence at Norwich, we have no other intimation than is conveyed in this slight notice. The preface also promises a second and enlarged edition comprising Digby's Observations, which accordingly made its appearance at Leyden in 1683, with additional notes, and in the same size, but containing above 500 pages.

In 1746 a German translation of the Religio Medici, with a Life of the author, was printed at Prenzlau,[6] (*Prenzl. Ragozy.* 1746.) This may probably be that attributed, by Jöcher, to George Veuztky.[7]

An Italian translation is said to exist, but I have not been able to ascertain the fact.

Besides these separate translations of Religio Medici, it must be supposed to have been included in a Dutch edition of his Works, translated by John Grundal, (Gründahl,) at Amsterdam, 1668—and in a German edition of them, by Christian Knorr, Baron of Rosenroth, (calling himself Christian Peganius) in 4to. Leips. 1680, which are announced by some bibliographers, but neither of which I have succeeded in obtaining.

Having thus enumerated the preceding editions of Religio Medici, it only remains to sketch the plan on which the present has been edited. The text is that of 1643, compared, and in some instances corrected, by others, especially Abp. Tenison's: occasionally a reading has been adopted from one of the MSS. but always inclosed in brackets and explained in a note. The few side-notes which occur in the original, are placed at the foot of the page, in long lines: together with here and there one from the margin of the manuscripts. The variations between the manuscripts and the editions of 1642 and 1643 are given:—except that, as the *MS. W.* 2 had not been obtained till 48 pp. had been printed, the collations from it are wanting in those three sheets:—they are added at p. xxiii. The notes consist of a selection from those of former

[6] See *Europaischen Bucher-Lexico Theophili Georgi, Supplement,* 1750.
[7] See *Jöcher, Allgemeines Gelehrten Lexicon, Leips.* 1750.

editors, some of my own, and a few supplied by the kindness of friends: to each is added an indication of its proper author.

It has been my endeavour to execute this plan with at least a creditable degree of accuracy;—to avoid errors altogether was not to be expected, but I was certainly not prepared for the mortifying discovery, exactly when too late,—just after the last sheet had been worked off, that the errors of the edition of 1643, enumerated in a table of errata accompanying it, had never been corrected, but (with few exceptions) had passed through every subsequent edition, MY OWN INCLUDED!—Some of these errors are important, involving a diametrical opposition of meaning; several passages containing them were most reluctantly printed, after having cost a careful comparison of all the editions and manuscripts in search of a better reading, and, in one instance a conjectural emendation was hazarded! The discovery having been made, the next question was,—what to do? I remembered the reply of a sagacious friend, some years ago, to an enquiry, as to the expediency of printing a table of errata,—"No, Sir, keep the fool within doors!" The advice was pleasant, as well as quaint, and, on the present occasion, it was considerably recommended by a doleful reflexion on the utter uselessness of the former unlucky table:—"what would be the advantage of confessing errors which few would detect themselves, and fewer still would correct, even if pointed out?" But in spite of all these reasonings, I felt bound, having discovered these errors, either to correct or to confess them. Some have therefore been cancelled, and a full detail of the rest will be found at pp. xxiii, xxiv,—together with some alterations, and the collations of *MS. W. 2*, before spoken of.

As the Observations by Sir Kenelm Digby have accompanied all the former editions of the work, since 1659, they are added, with the correspondence respecting them. The reply of the author to Dr. Browne has been collated with an original in the Bodleian,[8] and some variations noticed. A valuable correspondent, James Crossley, Esq., of Manchester, has pointed out to me that Morhof translated Digby's Observations into

[8] Bibl. Bodl. *MS. Rawlins.* cccxci.

Latin, and illustrated them with notes: but never published them.[9]

The continental celebrity of this work was greatly promoted by Merryweather's Latin translation of it. The foreign literati almost immediately began their remarks upon it. Guy Patin is one of the earliest: in a letter dated Paris, April 7th, 1645, he thus gives his opinion of it:—"Parlons d'autre chose. On fait icy grand état du livre intitulé *Religio Medici*. Cet Auteur a de l'esprit. Il y a de gentilles choses dans ce livre. C'est un mélancolique agréable en ses pensées; mais qui à mon jugement cherche maître en fait de religion, comme beaucoup d'autres, et peut-être qu' enfin il n'en trouvera aucun. Il faut dire de luy ce que Philippe de Comines a dit du fondateur des Minimes, l'Hermite de Calabre, François de Paule, *Il est encore en vie, il peut aussi bien empirer qu' amander.* La plûpart des livres que vous m' indiqués de la foire de Francfort ne sont pas nouveaux. J'en ay plusieurs chez moi."[1]

Several of the German critics most unceremoniously (and with about as much sagacity as candour) pronounced the author an atheist.[2] Yet are there not wanting German authorities of an opposite opinion: "Herman Conringius was wont to say, that he always read *Religio Medici* with fresh delight; and in respect to that imputation of atheism, or indifferency in religion, which had been circulated with such industry by certain supercilious critics, he exclaimed: 'Utinam nemo Medicorum, imo Theologorum, illo homine sit minus religiosus!'" —*Conringiana*, p. 10. Frederick Heister, son of the celebrated Laurentius Heister, thought himself obliged on Buddeus's publishing his Theses, to vindicate the physicians in general, and our author in particular, from the injurious aspersions cast upon them in that work.[3]

It is not wonderful to find, that at Rome *Religio Medici*

9 Vide *Polyhistor*, vol. ii, Prolegomena, p. 66, edit. 1747, 4to.

1 *Lettres de Guy Patin*, 12mo. Frankf. 1683, p. 12. See also Bayle, *Œuvres Diverses*, 3 vols. fol., vol. i, p. 25:—Father Nicéron, *Memoires, &c.*, tom. xxxiii, p. 353:—*Acta Eruditorum, Sup.* vol. i, *Leips.* 1692.

2 See, for example, Reimmanni *Hist. Atheismi*, p. 446, 448.—Tobias Wagner, *Exam. Elenchtic. Atheismi Speculativi*, c. v, p. 11.—Muller, *Examen Atheismi*, c. vi, § 34. Reiser, in *Dissertatione de Atheismo*, p. 35. Johan. Franc. Buddeus, *Theses de Atheismo et Superstitione*, p. 136, or, *Traité de l'Athéisme*, &c. 8vo. *Amst.* 1740, p. 88.

3 See his *Apologia pro Medicis*; § 19. *Amstel.* 1736, 8vo.

was placed in the *Index Expurgatorius*, as a prohibited book; —for certainly it is the work of a protestant, though of one remarkable for his charity towards others, whether papist or puritan:—but it does indeed excite contempt as well as indignation, to know that a work whose "every page displays the fervour of his piety, and the docility of his belief," should have induced any man to rank its author among infidels and atheists. Let it pass however; the present object is to edit the work, not to offer either eulogy or criticism; those, who do not perceive that it contains its own vindication, are referred to the eloquent and conclusive observations of his great admirer and biographer, Dr. Johnson.

To some readers it may not be unacceptable to notice such works, as have appeared similar in title to *Religio Medici*, and and in some instances avowedly imitations of it. This preface shall therefore conclude with the following list of them.

The first to be noticed[4] is Lord Herbert's treatise,

De Religione Laici, first published in 1645, at London, with the third edition of his *De Veritate*.—It was intended to shew, that the people can never attain to any satisfaction, as to the truth and certainty of any particular religion, and had better therefore be content with that which his Lordship had marked out for them, in his last-mentioned work. His

De Religione Gentilium[5] was published after his death, in 1663, 4to. It was written to prove that his five leading principles of Natural Religion were inscribed by the Almighty, as common notices on the minds of all men, and had been acknowledged universally in all nations, ages, and religions. It was reprinted several times, and published in English, in 1705.

Religio Jurisconsulti: London, 1649.—This curious little book is No. 453 of the 12mo. Tracts, in the Royal Collection of Pamphlets in the Museum, in volume 252. The day of its publication is marked as usual by the collector's hand, "Nou.° 9" on the title-page. A 2 contains his address "To the Readers," A 3 a curious dedication, and summary of subjects, together with some Latin

[4] In hunting through Watt, I meet with the following article: *Religio patiens, Cologne, 1566.—A Latin tragedy, by Andrew Fabricius, a learned popish Divine, born at Liege.*

[5] Once purchased from a catalogue in which it was described as "Lord Herbert on the Religion of *a Gentleman!*"

mottoes. The work then follows in 69 pages, with "Sic cogitavit *J. Botrie*" subscribed, and half a page of "Errata." *W. H. B.*[6]

Medici Catholicon, London, 1657, 12mo.—A curious little Book, written evidently in imitation of Browne. *J. C.*[7]

Religio Philosophi Peripatetici discutienda, authore P. F. Francisco Davenporto, vulgo, a Sancta Clara. Duaci, Anno 1662, 8vo. 162 pp. besides Indexes.—This tract was written on occasion of a miracle performed by the Virgin Mary in the year 1640. A man's leg had been amputated, and his friends, as well as himself, were one morning exceedingly surprised to find it had been restored to him, and that he had two legs instead of one. The book is written to shew, that this could not have happened by natural means, and that neither astrology, nor chemistry, nor melancholy, nor witchcraft, nor imagination, nor the Devil himself could do such a thing as this:—*ergo, concluditur esse miraculum.* It is a curious book, full of digressions, and odd stories. *J. C.*—The author, Christopher Davenport, *alias* Francis a S. Clara, *alias* Francis Hunt, *alias* Francis of Coventry, (for by all these names he was known,) was descended from an ancient Cheshire family, and born at Coventry, at the close of the 16th century. After spending some time at Merton College, Oxford, he passed into the communion of the Church of Rome, and entered the order of the Franciscans at Ypres. Afterwards he returned to England, as a Missionary, and was made one of the Chaplains of Henrietta the Queen of Charles the First. During the protectorate, M. de S. Clara absconded; but returned after the restoration, and became theologist to Catherina of Portugal, consort of Charles the Second. The greater parts of his works were printed at his own expence, in 2 vols. fol. at Doway, an. 1665.

The Religion of a Physician; or, Divine Meditations on the Grand and Lesser Festivals, by Edmund Gayton, or De Speciosa Villa. Lond. 1663. 4to. *Watt.*

Religio Stoici, with a friendly addresse to the Phanaticks of all Sects and Sorts. Edenburgh, 1665, very small 8vo. pp. 144 and 24 of prefaces, &c.—This quaint, but spirited little work, was written by Sir George Mackenzie. It was afterwards reprinted amongst his Essays on several Moral Subjects. Its object may best be described in the author's own words. See p. 141. "My design, all alongst this Discourse, butts at this one principle, *that Speculations in Religion are not so necessary, and are more dangerous than sincere practice.* It is in Religion as in Heraldry, the simpler the bearing be, it is so much the purer and the ancienter." It was also published in London under the following title:

"*The Religious Stoic;* or, a Short Discourse on Atheism, Superstition, the World's Creation, Eternity, Providence, &c. &c., by Sir G. M. Lond. 1685."

Religio Clerici, 1681, 12mo. pp. 231, with a frontispiece, by Van Hove, of Christ saving Peter from drowning.—The intent of

[6] Communicated by Mr. W. H. Black, of the British Museum.

[7] Communicated by James Crossley, Esq., of Manchester.

this work, which is written by a Clergyman, is to defend the established religion against the Romanists and Schismatics—to shew "that we never shall have peaceable days, as long as bulkers and coblers are preachers, and couranters." *J. M.*[8]

Religio Laici; or, A Layman's Faith. An Epistle, by John Dryden, 8vo. Lond. 1682.—A second edition was published, in 1683, which is very rare. In the same year appeared

Religio Laici, by Charles Blount, Esq., son of Sir Henry Blount of Staffordshire.—He has inscribed it to his "much-honored friend, John Dryden, Esquire," to whom he says, in the Epistle-dedicatory, "I have endeavoured that my discourse should be only a continuance of yours; and that, as you taught men how to believe, so I might instruct them how to live."[9] Leland, however, says[1] that this work is "little more than a translation of Lord Herbert's treatise of the same name. The additions and improvements he has made are so few, and of such small moment, as not to deserve a distinct consideration." Dryden's change of faith, after his publication of *Religio Laici,* called forth an attack in the following pamphlet, in which his title is turned against him.

Religio Laici, or a Layman's Faith touching the supreme and infallible guide of the church, by J. R. a convert of Mr. Bayes. In two letters to a friend in the country. Licensed June 1, 1688.—It is said to be replete with the grossest insolence, brutality, and ignorance.

Religio Jurisprudentis: Or the Lawyer's Advice to his Son. In Counsels, Essays, and other Miscellanies. Calculated chiefly to prevent the miscarriages of youth, and for the orthodox establishment of their morals in years of maturity. Per Philanthropum. Lond. 1685. *W. H. B.*—This is an anonymous treatise, but has a portrait of the author, with his coat of arms, which are those of the Hildesley family. The author was, as I have been told, Mark Hildesley, mentioned in an epitaph which is to be found in Butler's Life of Bishop Hildesley. *T. R.*[2]

Religio Militis: or The Moral Duty of a Soldier, shewing how he ought to behave himself towards God, his King, and country. London, 1690. *W. H. B.*—This seems to have been republished in 1695, 4to., and is said by my friend Mr. Crossley to have been written by—Morgan.

The Layman's Religion: humbly offered as a Help to a Modest Enquiry for every Man into his own Heart; both as being the only means to judge and save himself, and the best way to unite us all against our Common Enemies. The Second Edition, London, 1690.—38 pp. in small 4to. *W. H. B.*

The Second Part of the Lay-man's Religion: as an Appendix to the First. The Second Edition, London, 1690.—"To the Reader," 2 pp. and 15 pp. besides, small 4to. *W. H. B.*

8 Communicated by the Rev. J. Mitford, of Benhall, Suffolk.
9 *Malone's Dryden,* vol. iii, p. 310.
1 *View of Deistical Writers,* letter 4.
2 Communicated by Mr. Thomas Rodd, Bookseller, of Newport-Street.

Religio Bibliopolæ, by Benjamin Bridgewater, Gent. 1694, 12mo.—Of Mr. Benjamin Bridgewater, who was one of Dunton's hacks, Dunton thus speaketh in that strange rhapsody, his *Life and Errors*, p. 177. "He was of Trinity College, Cambridge, and M. A. His genius was very rich, and ran much upon poetry, in which he excelled. He was in part author of Religio Bibliopolæ. But alas! wine and love were the ruin of this ingenious gentleman." Dunton, in 1704, enlarged and published the work under the following title:

Religio Bibliopolæ: The New practice of Piety, writ in imitation of Dr. Browne's Religio Medici; or the Christian Virtuoso, discovering the right way to Heaven between all Extreams. To which is added, a Satyr on the House of Lords, for their throwing out the Bill against occasional Conformity, 1704, 12mo. 70 pp., besides Dedication and Preface."—There are several additions;—a long rambling Dedication, and a preface and introduction and conclusion, all evidently by Dunton, and which are none of them in the former, nor in the reprints of it, in 1728, and 1750, 8vo. The Dedication is to Mr. Locke, author of the Essay upon Human Understanding. The oddest part of the story, about this book, is that it is nothing else but an entire piece of patchwork, from the beginning to the end. In a copy of mine, I once took the pains of restoring by references one half of the book to its proper owners. Whether it was the ingenious Mr. Benjamin Bridgewater, or the ingenious Mr. John Dunton, who was guilty of these literary larcenies, I know not, but certainly a more extraordinary and flagrant case I never in the course of my reading met with. Glanville is the plaintiff in several instances, so is Howell, and Norris, and Boyle. *J. C.*—Another edition appeared in 1705, 12mo. with a portrait of Dunton prefixed. And in 1728, a reprint in 8vo. of the former work, first published in 1694, 12mo.—its title runs thus: "*Religio Bibliopolæ:* or the Religion of a Bookseller: which is likewise not improper to be perused by those of any other calling or profession. Lond. 1728," 8vo. 111 pp. besides 8 pp. of title, preface, &c. This was again reprinted in 1750.

Evangelium Medici, a Bernardo Conner, Lond. 1697, 8vo.—A work of very curious speculation; though not properly an imitation of Religio Medici. The most extraordinary part is that in which he considers the resurrection, and how it is to be accomplished; he goes through the different parts of the body, and decides which will and which will not find a place in our bodies when glorified. He has gone more minutely into this than Henry More, or Burnet of the Charter-House. *J. C.*

The Religion of a Prince; shewing that the precepts of the Holy Scriptures are the best Maxims of Government, by William Nichols, D. D. *London*, 1704, 8vo.—Against Machiavel, Hobbes, &c. *Watt.*

[3] Watt dates it 1691. He also gives the following, which seems to be a part of Dunton's Athenianism:—"Dunton's Creed, or the Religion of a Bookseller, in imitation of Browne's Religio Medici, dedicated to the Stationers' Company.—Without date.

A Gentleman's Religion: in Three Parts.—The first contains the Principles of Natural Religion. The second and third the Doctrines of Christianity, both as to Faith and Practice. With an Appendix, wherein it is proved, that nothing contrary to our reason can possibly be the object of our belief: but that it is no just exception against some of the doctrines of Christianity, that they are above our reason. The Fourth Edition. London, 1710. pp. 301. —Communicated by an ingenious and reverend friend, who adds, "This is a volume of small pieces, constituting the 5th volume of Archbishop Synge's Works, small 8vo." *W. H. B.*—The first edition was published, anonymously, at London, 1698, and the last edition at the Clarendon press, Oxford, in 1800, with the name of the author, "The most reverend Edward Synge, D. D. Archbishop of Tuam."

Religio Libertini, 8vo. 1715.—by Berridge. *J. C.*

The Religion of the Wits at Button's refuted; &c. In a dialogue between a Politician and a Divine. Lond. 1716, small 8vo. 72 pp. An attack on some of the infidel Wits of the day.

Lady's Religion: in two parts, London, 1748. 8vo. *Watt.*—The same, in 12mo. without date. *T. R.*

Religio Philosophi: or, the Principles of Morality and Christianity illustrated from a View of the Universe, and of Man's Situation in it. By William Hay, Esq. The Fourth Edition, London: 1771.—232 pp. besides the first half sheet. Of this excellent work, the author says in a short preface, that "his great end is, by rectifying men's ideas, and by removing vulgar prejudices, to fix religion on a firm basis." In the elegant edition of his Works, (2 vol. 4to. 1794,) this Essay occupies pp. 171—300 of the 1st vol. I find that the first edition was in 1753; the second in 1754; and the third may have been that mentioned by Watt, in 1760. I know not whether the reprint in his Works was the last or not. *W. H. B.*

Religio Laici: Second Edition, Lond. 1768, 8vo. 98 pp.—No author's name, but written by Stephen Tempest, Esq., of Bracewell in Craven, Yorkshire. The very sensible tract of a very sensible country gentleman. Vid. Whittaker's History of Craven, p. 88, who praises it, but not more than it deserves. *J. C.*—It obtained a new title-page in 1772, calling it, "Third edition."

Fragmentum Isaaci Hawkins Browne, Arm. Sive anti-Bolingbrokius; Liber primus, translated for a *Second Religio Medici*, by Sir Wm. Browne, late President, now Father of the College of Physicians, and F.R.S., 1768, 4to. Fragmentum Isaaci Browne completum, 1769, 4to.—*Hutchinson's Biographia Medica*, 1799, vol. i, p. 163. *E. H. B.*[4]

The Religion of a Lawyer, a Crazy Tale, (in Four Cantos;) analytical of the Kentish Story of Brookland Steeple. London, 1786, 8vo. 80 pp.—This poem is indeed,—"a crazy tale."

Religio Clerici, a Churchman's Epistle.—The Second Edition, corrected. London, John Murray, Albemarle Street, 1818.—On

4 Communicated by Edmund Henry Barker, Esq. of Thetford.

the title-page of the Museum copy is written with pencil, "by the Revd. E. Smedley." The work is a poem in reply to the question, 'Why are you a Church of England Christian?' 35 pp.

A Churchman's Second Epistle. By the Author of Religio Clerici. With Notes and Illustrations. London, 1819, 85 pp.—A curious work, in which there seem to be some good strokes of satire amongst the bigotry. *W. H. B.*—"In the latter part," the author says, "he has thought it his duty to express firmly, though he hopes not uncharitably, his opinion of the perils to which the Established Church is exposed by the rapid progress of modern Puritanism." A characteristick specimen of this gentleman's *religion*, as well as of his *charity*, is afforded by the concluding lines of his poem, where he desires to have it recorded in his epitaph, that

> "He loved established modes of serving God,
> Preached from a pulpit rather than a tub,
> And gave no guinea to a Bible Club!"

Religio Christiani; a Churchman's Answer to Religio Clerici, 1818, 8vo.

Religio Militis; or Christianity for the Camp.—Lond. 1827, 18mo. pp. 151.

The Religion of a Church of England-Man, 12mo. *T. R.*—This brief notice was furnished, I believe from memory, by Mr. Rodd, of Newport-Street, and was without date.

S. W.

Norwich,
Oct. 30th, 1829.

Additions and Corrections.

*** The reading of *MS. W.* 2 agrees with that of *MS. R.* in the first three sheets, unless otherwise mentioned in the present table.

Page 2, note 3; *for* '*MS. L.*' *read*, '*MSS. L. & W.* 2.'

4, n. 8; *add*, '*MS. W.* 2 reads, *improper actions.*'

6, n. 6; *dele*, 'and all the *MSS.*'

8, n. 8; The assertion in this note, that "the Jesuits, after their expulsion from Venice, have never again been tolerated there," was made by the Annotator, in whose time it was true: and I have been recently assured by a member of that Society, (through the medium of a friend,) that it is still true. I find, however, that the statement is no longer strictly correct. The Jesuits, though under considerable restrictions, did obtain readmission to the territory of the republic, in 1657,—by the influence of Pope Alexander VII, and in consideration of assistance rendered by that Pontiff, to the Venetians, in permission to levy taxes on their Clergy, and in a donation, to the republic and the family of Chigi, of a large sum of money, subscribed by the Jesuits themselves.—See *Racine, Abrégé de l'Histoire Ecclésiastique*, p. 40. *Histoire Général de la naissance et des progrès de la Compagnie de Jesus*, 4 vols. 12mo. 1761, t. i, p. 409—412. *Daru, Histoire de Venise*, t. iv, 570—572.

9, n. 3; *dele* the note, and *read*, 'Thus all the *MSS.* and *Edts.* 1642, 1643, 1645, and 1686;—those of 1659, 1672, 1678, 1682, and 1736 read, *have.* —*Ed.*'

9, n. 4; *dele* the last line; and, *after* '*MSS.*' *add*, 'except *MS. W.* 2.'

11, line 14; *that it rise*] *read*, 'that

it should rise.'—*Errata*, 1643.

11, n. 8; *for* '*MSS. W. & L.*' *read*, '*MSS. W., W.* 2 *& R.*'

12, n. 9; *dele* the note, and *read*, 'This clause is in *MSS. W. & W.* 2, but not in *MS. R.*—*Ed.*'

12, n. 2, line 6; *for* 'the living,' *read*, 'the number of the living.'

13, line 12; *disposed,*] *read*, 'indisposed.'—*Errata*, 1643. See the quotation of this passage by Dr. Southey, (*Colloquies* ii, p. 62, *note,*) in which its appositeness is of course marred by this unfortunate mistake.—*Ed.*

13, line 30; *methinks, &c.*] See note at p. 122.—*Ed.*

14, line 1; *Tertullian.*] An author in whose works Browne appears to have been deeply read, and whom he strongly resembles.—*J. C.*

14, line 16; *cenotaph.*] There is, in *MS. W.* 2, a blank instead of this word. —*Ed.*

16, n. 2; *add*, 'but they are in *MS. W.* 2.'

16, n. 3; *add*, '*MS. W.* 2 reads, "that angels cannot do it."'

16, n. 4; *after* '*MS. W.*' *add*, '*W.* 2 *& R.*'

19, n. 3; *add*, '*MSS. W., W.* 2 *& R.* read, "as it was before the first, when."'

19, n. 4; *add*, '*W.* 2 *& R.*'

21, n. 3; *add*, '*expanded* in *MS. W.* 2.'

22, l. 13; *from which, by, &c.*] *read*, from which it cannot swerve, *but* by &c.'—*Errata*, 1643. In none of the editions has this omission of the *but* been supplied:—in the present a conjectural reading was suggested, in order to make sense without it.—*Ed.*

24, n. 4; *add*, to the first paragraph, '*MS. W.* 2 reads, "'T was not a mere chance to discover the or powder-treason, contrived by a miscarriage of the letter,"—but this is, no doubt, a false reading. The Author meant to say, "'T was not dumb chance that, to discover the fougade or powder-plot, contrived *a* (i. e. *its*) miscarriage *in* (i. e. *by means of*) the letter."'

24, n. 5; *add*, '*MS. W.* 2 reads, "dispenseth her favour."'

25, l. 19; *sortileges*] See this subject treated in a masterly manner, in Gataker's treatise on Lots.—*J. C.*

26, l. 14; *that can supply them all.*] Here terminates *MS. L.*—*Ed.*

27, l. 10; *yea*] *read*, 'yet.'—*Errata*, 1643.

29, l. 28; *peremptorily maintain, &c.*] See this argument used by Bp. Warburton, towards the close of the Dedication of his *Divine Legation.*—*J. C.*

30, n. 5; *for*, 'clause,' *read*, 'sentence.'

32, n. 5; *add*, '*W.* 2 *& R.*'

32, n. 7; *add*, 'See *Johnson's Journey to the Western Islands, &c. Works*, vol. viii, p. 279.'

33, n. 9; *add*, 'but in *MS. W.* 2.'

38, n. 8; *for* '*MS. W.*' *read*, 'all the *MSS.*'

38, l. 13; *the*] *read*, 'that.'—*Errata*, 1643.

41, n. 7; *for* '*cannot &c.*' *read*, 'cannot do all things but sin.'

44, n. 3; *add*, 'See *Retrospective Review. New Series*, ii, 216.—*Ed.*'

44, n. 8; *for*, '*MS. W.* reads,' *read*, 'all the *MSS.* read.'

45, n. 9; *after* '1642,' *add*, 'and *MS. W.*'

45, n. 1; *for*, '*MS. W.*' *read*, 'all the *MSS.*'

68, n. 6; *read*, 'Wanting in *Edts.* 1642 and all the *MSS.*—*Ed.*'

76, l. 16; *not miscall*] *read*, 'not to miscall.'—*Errata*, 1643.

86, l. 7; *some*] *read*, 'the same.'—*Errata*, 1643.

88, l. 28; *can*] *read*, 'cannot.'—*Errata*, 1643.

95, l. 9; *in*] *read*, 'the.'—*Errata*, 1643.

101, l. 17; *too*] *read*, 'so.'—*Errata*, 1643.

101, n. 1; *for* '1751,' *read*, '1571.'

112, l. 2; *earthly*] *read*, 'watery.'—*Errata*, 1643.

116, n. 4; *add*, 'or rather the translator availed himself of the *Errata*, in Ed. 1643, as ought the present Editor.'

117, l. 6; *a story out of Pliny,*] *Edts.* 1678, 1682, & 1736, add the following clause here,—"A tale of Bocace or Malizpini;" on what authority does not appear.—*Ed.*

128, *Second Paragraph*;] Sir Kenelm, in this passage, implies that Browne attributed *De Tribus Impostoribus* to Bernardinus Ochinus: which is not the case.—Much curious speculation and research (and perhaps some invention) has been bestowed on the question of the author of this work and even of its existence:—a condensed account of which may be found in Barbier's *Dictionnaire des Ouvrages Anonymes et Pseudonymes*, 8vo. 1824, vol. iii, p. 648,—art. 21612; see also *Renouard, Catalogue de la Bibliotheque d'um Amateur*, t. 1. p. 118: and *Bayle.*—*Ed.*

THE ANNOTATOR[1] TO THE READER.

A. GELLIUS (*Noct. Attic.* l. xx. cap. ult.) notes some books that had strange titles; Pliny *(Præfat. Nat. Hist.)* speaking of some such, could not pass them over without a jeer; so strange (saith he) are the titles of some books, *Ut multos ad vadimonium deferendum compellant.* And Seneca saith, some such there are, *Qui patri obstetricem parturienti filiæ accersenti moram injicere possint.* Of the same fate this present tract Religio Medici hath partaken: exception by some hath been taken to it in respect of its inscription, which, say they, seems to imply, that physicians have a religion by themselves, which is more than theology doth warrant: but it is their inference, and not the title that is to blame; for no more is meant by that, or endeavoured to be proved in the book, than that (contrary to the opinion of the unlearned) physicians have religion as well as other men.

For the work itself, the present age hath produced none that hath had better reception amongst the learned; it hath been received and fostered by almost all, there having been

[1] Though a selection only of Mr. Keck's notes has been given in the present edition, yet it has been thought right to preserve his preface, which has been referred to in the course of the foregoing introductory observations.—*Ed.*

but one that I know of (to verify that books have their fate from the capacity of the reader) that hath had the face to appear against it; that is Mr. Alexander Rosse;[2] but he is dead, and it is uncomely to skirmish with his shadow. It shall be sufficient to remember to the reader, that the noble and most learned knight, Sir Kenelm Digby, has delivered his opinion of it in another sort, who though in some things he differ from the author's sense, yet hath he most candidly and ingenuously allowed it to be a "very learned and excellent piece;" and I think no scholar will say there can be an approbation more authentick. Since the time he published his Observations upon it, one Mr. Jo. Merryweather, a Master of Arts of the University of Cambridge, hath deemed it worthy to be put into the universal language, which about the year 1644 he performed; and that hath carried the author's name not only into the Low Countries and France, (in both which places the book in Latin hath since been printed,) but into Italy and Germany, and in Germany it hath since fallen into the hands of a gentleman of that nation[3] (of his name he hath given us no more than L. N. M. E. N.) who hath written learned Annotations upon it in Latin, which were printed together with the book, at Strasbourg, 1652. And, for the general good opinion the world had entertained both of the work and author, this stranger tells you:[4] "Inter alios auctores incidi in librum cui titulus Religio Medici, jam ante mihi innotuerat lectionem istius libri multos præclaros viros delectasse, imo occupasse. Non ignorabam librum in Anglia, Gallia, Italia, Belgio, Germania, cupidissime legi; constabat mihi eum non solum in Anglia, Batavia, sed et Parisiis cum præfatione, in qua auctor magnis laudibus fertur, esse typis mandatum. Compertum mihi erat multos magnos atque eruditos viros censere auctorem (quantum ex hoc scripto perspici potest) sanctitate vitæ ac pietate elucere, &c." But for the worth of the book it is so well known to every Englishman that is fit to read it, that this attestation of a foreigner may seem superfluous.

2 In his *Medicus Medicatus*.

3 That he was a German appears by his notes, page 35, where he useth these words, *Dulcissima nostra Germania, &c.*

4 In *Præfat. Annotat.*

The German, to do him right, hath in his annotations given a fair specimen of his learning, shewing his skill in the languages, as well ancient as modern; as also his acquaintance with all manner of authors, both sacred and profane, out of which he hath amassed a world of quotations: but yet, not to mention that he hath not observed some errors of the press, and one or two main ones of the Latin translation, whereby the author is much injured; it cannot be denied but he hath past over many hard places untouched, that might deserve a note; that he hath made annotations on some, where no need was; in the explication of others hath gone besides the true sense.

And were he free from all these, yet one great fault there is he may be justly charged with, that is, that he cannot *manum de tabula* even in matters the most obvious: which is an affectation ill-becoming a scholar; witness the most learned annotator, "Claud. Minos. Divion. in præfat. commentar. Alciat. Emblemat. præfix. præstat (saith he) brevius omnia persequi, et leviter attingere quæ nemini esse ignota suspicari possint, quam quasi ἐαψωδεῖν, perque locos communes identidem expatiari."

I go not about, by finding fault with his, obliquely to commend my own; I am as far from that, as 't is possible others will be: all I seek by this preface, next to acquainting the reader with the various entertainment of the book, is, that he would be advertised, that these Notes were collected ten years since,[5] long before the German's were written; so that I am no plagiary, (as who peruseth his notes and mine will easily perceive,) and in the second place, that I made this recueil merely for mine own entertainment, and not with any intention to evulge it; truth is my witness, the publication proceeds merely from the importunity of the bookseller (my special friend), who, being acquainted with what I had done, and about to set out another edition of the book, would not be denied these notes to attex to it; 't is he (not I) that divulgeth it, and whatever the success be, he alone is concerned

5 Excepting two or three particulars, in which reference is made to some books that came over since that time.

in it: I only say for myself what my annotations bear in the frontispiece.

Nec satis est vulgasse fidem——

that is, that it was not enough to all persons (though pretenders to learning) that our physician had published his creed, because he wanted an exposition. I say further, that the German's is not full; and that (——*quicquid sum ego quamvis infra Lucilli censum ingeniumq;*——) my explications do in many things illustrate the text of my author.

24 Martii, 1654.

CORRESPONDENCE

BETWEEN Dr. BROWNE AND SIR KENELM DIGBY.

A Letter sent upon the information of animadversions to come forth, upon the imperfect and surreptitious copy of Religio Medici, whilst this true one was going to press.

HONOURABLE SIR,

GIVE your servant, who hath ever honoured you, leave to take notice of a book at present in the press, intituled (as I am informed,) animadversions upon a treatise lately printed under the name of Religio Medici; hereof, I am advertized, you have descended to be the author. Worthy Sir, permit your servant to affirm there is contained therein nothing that can deserve the reason of your contradictions, much less the candour of your animadversions; and to certify the truth thereof, that book (whereof I do acknowledge myself the author) was penned many years past, and (what cannot escape your apprehension) with no intention for the press, or the least desire to oblige the faith of any man to its assertions. But what hath more especially emboldened my pen unto you at present, is, that the same piece, contrived in my private study, and as an exercise unto my self, rather than exercitation for any other, having past from my hand under a broken and imperfect copy, by frequent transcription it still run forward into corruption, and after the addition of some things,

omission of others, and transposition of many, without my assent or privacy, the liberty of these times committed it unto the press; whence it issued so disguised, the author without distinction could not acknowledge it. Having thus miscarried, within a few weeks I shall, God willing, deliver unto the press the true and intended original (whereof in the mean time your worthy self may command a view) otherwise when ever that copy shall be extant, it will most clearly appear, how far the text hath been mistaken, and all observations, glosses, or exercitations thereon, will in a great part impugn the printer or transcriber, rather than the author. If, after that, you shall esteem it worth your vacant hours to discourse thereon, you shall but take that liberty which I assume myself, that is, freely to abound in your sense, as I have done in my own. However ye shall determine, you shall sufficiently honour me in the vouchsafe of your refute, and I oblige the whole world in the occasion of your pen.

Your servant,

NORWICH, T. B.

March 3, 1642.

WORTHY SIR,

SPEEDILY upon the receipt of your letter of the third current, I sent to find out the printer that Mr. Crook (who delivered me yours) told me was printing something under my name, concerning your Treatise of Religio Medici, and to forbid him any further proceeding therein; but my servant could not meet with him; whereupon I have left with Mr. Crook a note to that purpose, entreating him to deliver it to the printer. I verily believe there is some mistake in the information given you, and that what is printing must be from some other pen than mine; for such reflexions as I made upon your learned and ingenious discourse, are so far from meriting the press, as they can tempt no body to a serious reading of them; they were notes hastily set down, as I suddenly ran over your excellent piece, which is of so weighty subjects, and so strongly penned, as requireth much time, and sharp attention, but to comprehend it; whereas what I writ

was the employment but of one sitting; and there was not twenty-four hours between my receiving my Lord of Dorset's Letter that occasioned what I said, and the finishing my answer to him; and yet part of that time was taken up in procuring your book, which he desired me to read, and give him an account of; for till then I was so unhappy as never to have heard of that worthy Discourse. If that letter ever come to your view, you will see the high value I set upon your great parts: and if it should be thought I have been something too bold in differing from your sense, I hope I shall easily obtain pardon, when it shall be considered, that his Lordship assigned it me as an exercitation to oppose in it, for entertainment, such passages as I might judge capable thereof; wherein what liberty I took is to be attributed to the security of a private letter, and to my not knowing (nor my Lord's) the person whom it concerned.

But Sir, now that I am so happy as to have that knowledge, I dare assure you, that nothing shall ever issue from me, but savouring of all honour, esteem, and reverence, both to yourself, and that worthy production of yours. If I had the vanity to give myself reputation by entering the lists, in publick, with so eminent and learned a man as you are, yet I know right well, I am no ways able to do it; it would be a very unequal congress: I pretend not to learning: those slender notions I have are but disjointed pieces I have by chance gleaned up here and there: to encounter such a sinewy opposite, or make animadversions upon so smart a piece as yours is, requireth a solid stock and exercise in school-learning. My superficial besprinkling will serve only for a private letter, or a familiar discourse with lady-auditors. With longing I expect the coming abroad of the true copy of that book, whose false and stolen one hath already given me so much delight. And so, assuring you I shall deem it a great good fortune to deserve your favour and friendship, I kiss your hand, and rest,

Your most humble servant,

KENELM DIGBY.

WINCHESTER-HOUSE,
March 20, 1642.

"—*Religio Medici* was more accurately published, with an admonition prefixed '*to those who have or shall peruse the observations upon a former corrupt copy;*' in which there is a severe censure, not upon DIGBY, who was to be used with ceremony, but upon the Observator who had usurped his name: nor was this invective written by DR. BROWNE, who was supposed to be satisfied with his opponent's apology; but by some officious friend zealous for his honour, without his consent." *Dr. Johnson's Life of Sir T. Browne.*

To such as have, or shall peruse the Observations upon a former corrupt copy of this book.

THERE are some men that Politian speaks of, *Cui quam recta manus, tam fuit et facilis:* and it seems the author to the Observations upon this book would arrogate as much to himself, for they were, by his own confession, but the conceptions of one night; a hasty birth; and so it proves: for what is really controllable he generally omitteth, and what is false upon the errour of the copy, he doth not always take notice of; and wherein he would contradict, he mistaketh, or traduceth the intention, and (besides a parenthesis sometimes upon the author) only meddleth with those points from whence he takes an hint to deliver his prepared conceptions. But the gross of his book is made out by discourses collateral, and digressions of his own, not at all emergent from this discourse; which is easily perceptible unto the intelligent reader. Thus much I thought good to let thee understand without the author's knowledge, who, slighting the refute, hath inforcedly published (as a sufficient confutation) his own book: and in this I shall not make so bold with him, as the observator hath done with that noble knight, whose name he hath wrongfully prefixed, as I am informed, to slight animadversions: but I leave him to repentance, and thee to thy satisfaction.

Farewell.

Yours, A. B.

TO THE READER.

CERTAINLY that man were greedy of life, who should desire to live when all the world were at an end; and he must needs be very impatient, who would repine at death in the society of all things that suffer under it. Had not almost every man suffered by the press, or were not the tyranny thereof become universal, I had not wanted reason for complaint: but in times wherein I have lived to behold the highest perversion of that excellent invention, the name of his Majesty defamed, the honour of Parliament depraved, the writings of both depravedly, anticipatively, counterfeitly, imprinted: complaints may seem ridiculous in private persons; and men of my condition may be as incapable of affronts, as hopeless of their reparations. And truly had not the duty I owe unto the importunity of friends, and the allegiance I must ever acknowledge unto truth, prevailed with me; the inactivity of my disposition might have made these sufferings continual, and time, that brings other things to light, should have satisfied me in the remedy of its oblivion. But, because things evidently false are not only printed, but many things of truth most falsely set forth; in this latter I could not but think myself engaged: for, though we have no power to redress the former, yet in the other the reparation being within ourselves, I have at present represented unto the world a full and intended copy of that piece, which was most imperfectly and surreptitiously published before.

This I confess, about seven years past, with some others of affinity thereto, for my private exercise and satisfaction, I had

at leisurable hours composed; which being communicated unto one, it became common unto many, and was by transcription successively corrupted, until it arrived in a most depraved copy at the press. He that shall peruse that work, and shall take notice of sundry particulars and personal expressions therein, will easily discern the intention was not publick: and, being a private exercise directed to myself, what is delivered therein was rather a memorial unto me, than an example or rule unto any other: and therefore, if there be any singularity therein correspondent unto the private conceptions of any man, it doth not advantage them; or if dissentaneous thereunto, it no way overthrows them. It was penned in such a place, and with such disadvantage, that (I protest), from the first setting of pen unto paper, I had not the assistance of any good book, whereby to promote my invention, or relieve my memory; and therefore there might be many real lapses therein, which others might take notice of, and more than I suspected myself. It was set down many years past, and was the sense of my conceptions at that time, not an immutable law unto my advancing judgement at all times; and therefore there might be many things therein plausible unto my passed apprehension, which are not agreeable unto my present self. There are many things delivered rhetorically, many expressions therein merely tropical, and as they best illustrate my intention; and therefore also there are many things to be taken in a soft and flexible sense, and not to be called unto the rigid test of reason. Lastly, all that is contained therein is in submission unto maturer discernments; and, as I have declared, [I] shall[1] no further father them than the best and [most] learned[1] judgements shall authorize them: under favour of which considerations, I have made its secrecy publick, and committed the truth thereof to every ingenuous reader.

THOMAS BROWNE.

[1] [*I*] *shall &c. . . . .* [*most*] *learned &c.*] Conjecturally inserted, and therefore inclosed within brackets;—a distinction which will be carefully observed throughout the present edition, in the (very few) instances which may occur of the slightest deviation from preceding editions.—*Ed.*

Religio Medici.

FOR my religion, though there be several circumstances that might persuade the world I have none at all,—as the general scandal of my profession,[1]—the natural course of my studies,[2]—the indifferency of my behaviour and discourse in matters of religion (neither violently defending one, nor with that common ardor and contention opposing another),—yet, in despite hereof, I dare without usurpation assume the honorable style of a christian. Not that I merely owe this title to the font, my education, or the clime wherein I was born, as being bred up either to confirm those principles my parents instilled into my unwary understanding, or by a general consent proceed in the religion of my country; but that having, in my

1 . . . . *scandal of my profession,*] Physicians do commonly bear ill in this behalf. It is a common speech, *Ubi tres medici, duo athei.* The reasons why those of that profession (I declare myself that I am none, but *causarum actor mediocris*, to use Horace his phrase) may be thought to deserve that censure, the author rendereth, § 19.—*K.*

2 . . . . *the natural course of my studies,*] The vulgar lay not the imputation of atheism only upon physicians, but upon philosophers in general; who, for that they give themselves to understand the operations of nature, calumniate them, as though they rested in the second causes, without any respect to the first. Hereupon it was, that in the tenth age Pope Silvester the Second passed for a magician, because he understood geometry and natural philosophy. *Baron. Annal.* 990. And Apuleius, long before him, labored of the same suspicion, upon no better ground. He was accused, and made a learned apology for himself; and in that hath laid down what the ground is of such accusations. *Apul. in Apolog.* And it is possible that those that look upon the second causes scattered, may rest in them, and go no further, as my Lord Bacon, in one of his Essays, observeth; but our author tells us there is a true philosophy, from which no man becomes an atheist, § 48.—*K.*

riper years and confirmed judgment, seen and examined all, I find myself obliged, by the principles of grace, and the law of mine own reason, to embrace no other name but this: neither doth herein my zeal so far make me forget the general charity I owe unto humanity, as rather to hate than pity Turks, Infidels, and (what is worse) Jews; rather contenting myself to enjoy that happy style, than maligning those who refuse so glorious a title.

Quousque patiere, bone Jesu!
Judæi te semel, ego sæpius crucifixi;
Illi in Asia, ego in Britania,
Gallia, Germania;
Bone Jesu, miserere mei, et Judæorum.[3]

SECT. II.—But, because the name of a Christian is become too general to express our faith,—there being a geography of religion[4] as well as lands, and every clime not only distinguished by its laws and limits, but circumscribed by its doctrines and rules of faith,—to be particular, I am of that reformed new-cast religion, wherein I dislike nothing but the name; of the same belief our Saviour taught, the apostles disseminated, the fathers authorized, and the martyrs confirmed; but, by the sinister ends of princes, the ambition and avarice of prelates,[5] and the fatal corruption of times, so decayed, impaired, and fallen from its native beauty, that it required the careful and charitable hands of these times to restore it to its primitive integrity. Now, the accidental occasion whereupon, the slender means whereby, the low and abject condition of the person by whom, so good a work was set on foot,[6] which in our adver-

[3] This verse is inserted from the *MS. L.—Ed.*

[4] . . . *a geography of religion*] That is, of Christian religion, which you may see described in Mr. Brerewood's inquiries.—*K.*

Præsertim in Europa inter Christianos; vide nuper Amstelodami editum libellum, cujus auctor Bernhardus Varenius, *De Diversitat. Gent. Religion.* In Asia tamen et Africa magna etiam religionum diversitas est: et id non solum inter Ethnicos,—ut sunt Chinenses ac Japonenses,—(vide *Trigaut. De Exped. Christ. apud Chin.* et *Bernh. Varen. in Descriptione Regni Japoniæ,*)—sed etiam inter Mahumetanos, ut addiscimus ex Leone Africano, lib. viii, cap. 25.—*M.*

[5] . . . . *prelates.*] Both the surreptitious editions, (of 1642) with the *MSS. W. & R.*, read, *presbyters.—Ed.*

[6] . . . . *so good a work was set on foot,*] This is graphically described by Thuanus, in his history: but, because his words are too large for this purpose, I shall give it you somewhat more briefly, according to the relation of the author of the history of the council of Trent. The occasion was the necessity of Pope Leo the Tenth, who by his profusion had so exhausted the treasure of the church, that he was constrained to have recourse to the publishing of indulgences to raise monies; some of which he had destined to his own treasury, and other part to his allies, and

saries beget contempt and scorn, fill me with wonder, and are the very same objections the insolent pagans first cast at Christ and his disciples.

SECT. III.—Yet I have not so shaken hands with[7] those

particularly to his sister he gave all the money that should be raised in Saxony; and she, that she might make the best profit of the donation, commits it to one Aremboldus, a bishop, to appoint treasurers for these indulgences. Now the custom was, that, whensoever these indulgences were sent into Saxony, they were to be divulged by the friars Eremites, of which order Luther then was: but Aremboldus his agents thought with themselves that the friars Eremites were not so well acquainted with the trade that, if the business should be left to them, they themselves should either be able to give so good an account of their negotiation, or get so much by it, as they might do in case the business were committed to another order. They thereupon recommended it to (and the business was undertaken by) the Dominican friars, who performed it so ill, that the scandal arising both from thence, and from the ill lives of those that set them at work, stirred up Luther to write against the abuses of these indulgences: which was all he did at first; but then, not long after, being provoked by some sermons and small discourses that had been published against what he had written, he rips up the business from the beginning, and publishes xcv theses against it at Wittenburg. Against these, Tekel, a Dominican, writes; then Luther adds an explication to his. Eckius and Prierius, Dominicans, thereupon take up the controversy against him: and now Luther begins to be hot; and because his adversaries could not found the matter of indulgences upon other foundations than the Pope's power and infallibility, that begets a disputation betwixt them concerning the Pope's power, which Luther insists upon as inferior to that of a general council; and so by degrees he came on to oppose the popish doctrines of remission of sins, penances, and purgatory; and by reason of Cardinal Cajetan's imprudent management of the conference he had with him, it came to pass that he rejected the whole body of popish doctrine. So that by this we may see what was the accidental occasion wherein, the slender means whereby, and the abject condition of the person by whom, the work of reformation of religion was set on foot.—*K.*

7 .... *shaken hands with .... as to stand in diameter and sword's point with them.*] These words are rendered by Mr. Merryweather, *memet adjungo ..... ita ut iisdem ex diametro repugnent:* wherein he hath too much played the scholar, and showed himself to be more skilful in foreign and ancient customs than in the vernacular practice and usage of the language of his own country: for although, amongst the Latins, protension of the hand was a symbol and sign of peace and concord;—as Alexander ab Alexandro, "Manum vero protendere, pacem peti significabat," *Gen. Dier.* lib. iv, cap. ult.; which also is confirmed by Cicero, *Pro Dejotaro*, and Cæsar, *De Bello Gallico*, lib. ii;—and was used in their first meetings, as appears by the phrase, "jungere hospitio dextras," and by that of Virgil,

"Oremus pacem, et dextras tendamus inermes,"

and many like passages, that occur in the poets, to which I believe the translator had respect; yet, in modern practice, especially with us in England, that ceremony is used as much in our adieus as in the first congress; and so the author meant in this place, by saying he had not shaken hands; that is, that he had not so deserted or bid farewell to the Romanists, as to stand at sword's point with them: and then he gives his reasons at those words, "for omitting those improperations, &c." So that, instead of *memet adjungo*, the translator should have used some word or phrase of a clean contrary signification. And instead of *ex diametro repugnent*, it should be *ex diametro repugnem.*—*K.*

Il semble que le translateur en Latin n'a pas bien compris cette façon de parler, se servant au lieu de cela, *memet adjungo. Shaken hands* sert ordinairement quand on prend son congé de quelqu'un, et qu'on dit adieu.—*Fr. Tr.*

It has been remarked to me, that Keck's quotation from Virgil is inapplicable: he might more properly have adduced the following passages:—*Æn.* i. i, 408. 514. vi, 697. viii, 124. 164. 467.—*Ed.*

desperate resolutions who had rather venture at large their decayed bottom, than bring her in to be new-trimmed in the dock,—who had rather promiscuously retain all, than abridge any, and obstinately be what they are, than what they have been,—as to stand in diameter and sword's point with them.[7] We have reformed from them, not against them: for, omitting those improperations[8] and terms of scurrility betwixt us, which only difference our affections, and not our cause, there is between us one common name and appellation, one faith and necessary body of principles common to us both; and therefore I am not scrupulous to converse and live with them, to enter their churches in defect of ours, and either pray with them or for them. I could never perceive any rational consequence from those many texts which prohibit the children of Israel to pollute themselves with the temples of the heathens; we being all Christians, and not divided by such detested impieties as might profane our prayers, or the place wherein we make them; or that a resolved conscience may not adore her Creator any where, especially in places devoted to his service; where, if their devotions offend him, mine may please him; if theirs profane it, mine may hallow it. Holy water and crucifix (dangerous to the common people) deceive not my judgment, nor abuse my devotion at all. I am, I confess, naturally inclined to that which misguided zeal terms superstition: my common conversation I do acknowledge austere, my behaviour full of rigor, sometimes not without morosity; yet, at my devotion I love to use the civility of my knee, my hat, and hand, with all those outward and sensible motions which may express or promote my invisible devotion. I should violate my own arm rather than a church; nor willingly deface the name of saint or martyr.[9] At the sight of a cross, or crucifix, I can dispense with my hat, but scarce with the thought or memory of my Saviour. I cannot laugh at, but rather pity, the fruitless journeys of pilgrims, or contemn the miserable condition of

8 . . . . *improperations*] From *impropero*, to reproach, to taunt; see in *Plaut. Rud.* 3, 4. *MS. R.* has a blank in place of the word; and in *MS. L.* it stands, *impropriations.*—*Ed.*

9 *I should violate my own arm rather than a church; nor willingly, &c.*] The two editions of 1642 and *MSS. W. & R.* have this sentence thus: "I should cut off my arm, rather than violate a church window, than deface or demolish the memory of a saint or martyr."—*Ed.*

friars; for, though misplaced in circumstances, there is something in it of devotion. I could never hear the Ave-Mary bell* without an elevation,[1] or think it a sufficient warrant, because they erred in one circumstance, for me to err in all,—that is, in silence and dumb contempt. Whilst, therefore, they directed their devotions to her, I offered mine to God; and rectified the errors of their prayers by rightly ordering mine own. At a solemn procession I have wept abundantly, while my consorts, blind with opposition and prejudice, have fallen into an excess of scorn and laughter. There are, questionless, both in Greek, Roman, and African churches, solemnities and ceremonies, whereof the wiser zeals do make a Christian use; and which stand condemned by us, not as evil in themselves, but as allurements and baits of superstition to those vulgar heads that look asquint on the face of truth, and those unstable judgments that cannot consist in the narrow point and centre of virtue without a reel or stagger to the circumference.

Sect. iv.—As there were many reformers, so likewise many reformations; every country proceeding in a particular way and method, according as their national interest, together with their constitution and clime, inclined them: some angrily and with extremity;[2] others calmly and with mediocrity, not rending, but easily dividing, the community, and leaving an honest possibility of a reconciliation;—which, though peaceable spirits do desire, and may conceive that revolution of time and the mercies of God may effect, yet that judgment that shall consider the present antipathies between the two extremes,—their contrarieties in condition, affection, and opinion,[3]—may, with the same hopes, expect a union in the poles of heaven.

* A church-bell, that tolls every day at six and twelve of the clock; at the hearing whereof every one, in what place soever, either of house or street, betakes himself to his prayer, which is commonly directed to the Virgin.[a]

1 . . . . *elevation,*] *occasion,* in the editions of 1642 and *MSS. W. R.*; *oraison* in *MS. L.*—*Ed.*

a Cette coustume n'est pas seulement en usage parmi les papistes, mais aussi parmi les Luthériens; mais ceux-cy ne font pas leurs prières en l'honneur de Marie.—*Fr. Tr.*

2 . . . . *with their constitution and clime, &c.*] The Lansdowne *MS.* reads . . . . "with their constitution and temper, inclined them: some with extremity and fury, &c."—*Ed.*

3 . . . . *opinion,*—] In the Lansdowne *MS.* the paragraph is thus concluded: "—and will not easily despair of so happy an effect, may as easily conceive an union with the poles in heaven."—*Ed.*

SECT. V.—But, to difference myself nearer, and draw into a lesser circle; there is no church whose every part so squares unto my conscience, whose articles, constitutions, and customs, seem so consonant unto reason, and, as it were, framed to my particular devotion, as this whereof I hold my belief—the church of England; to whose faith I am a sworn subject, and therefore, in a double obligation, subscribe unto her articles, and endeavour to observe her constitutions:[4] whatsoever is beyond, as points indifferent, I observe according to the rules of my private reason, or the humor and fashion of my devotion; neither believing this because Luther affirmed it, nor disapproving[5] that because Calvin hath disavouched it. I condemn not all things in the council of Trent, nor approve all in the synod of Dort. In brief, where the Scripture is silent, the church is my text; where that speaks, 't is but my comment; where there is a joint silence of both, I borrow not the rules of my religion from Rome or Geneva, but from the dictates of my own reason. It is an unjust scandal of our adversaries, and a gross error in ourselves, to compute the nativity of our religion from Henry the Eighth; who, though he rejected the Pope, refused not the faith of Rome,[6] and effected no more than what his own predecessors desired and essayed in ages past,[7] and it was conceived the state of Venice would have

4 . . . . *constitutions:*] The surreptitious editions and the *MSS. W. R. & L.* insert here the following clause:—"no man shall reach my faith unto another article, or command my obedience to a canon more."—*Ed.*

5 . . . . *disapproving*] Thus in *MS. R.*; *MS. L.* has, *disallowing*; *MS. W.* and all the editions read, *disproving*; but, without doubt, incorrectly.—*Ed.*

6 . . . . *who, though he rejected the Pope,* refused *not the faith of Rome,*] So much Buchanan, in his own life, written by himself, testifieth; who, speaking of his coming into England, about the latter end of that king's time, saith, "sed ibi tum omnia adeo erant incerta, ut eodem die ac eodem igne (very strange!) utriusque factionis homines cremarentur, Henrico viii, jam seniore suæ magis securitati quam religionis puritati intento." *Opera Omnia, cur. Ruddimanno. Edin.* 1715, p. 3. And, for confirmation of this assertion of the author, vide *Stat.* 31 Hen. VIII, cap. xiv.—*K.*

See also *Hume, History of England,* chap. 31, anno 1534.—*Lingard, Hist. of England,* Hen. VIII, ch. 3, 1531, May 4.—*Ibid.* chap. iv, § 3.—*Henry, Hist. of Great Britain,* vol. xii, p. 71.

Instead of *refused,* the Editions of 1642, and all the *MSS.* read, *confuted.*—*Ed.*

7 . . . . *and effected no more than what his own predecessors, &c.*] It can scarcely be necessary to illustrate this allusion by reminding the reader of the long and repeated struggles maintained against papal tyranny by many sovereigns of this kingdom before the time of Henry VIII, especially by William Rufus, and Henry I & II, &c. &c. and Becket, and John against Pope Innocent III. But these contests ever ended in the advancement of the claims and power of Rome, and in the humiliation of the king and government. Nor will this result surprise

attempted in our days.[8] It is as uncharitable a point in us to fall upon those popular scurrilities and opprobrious scoffs of the bishop of Rome, to whom, as a temporal prince, we owe the duty of good language. I confess there is a cause of passion

us, if we consider the direct tendency of the transactions which took place, to produce, by the alternate appeals of all parties to the Pope, the extension of his power; and if we estimate, still further, the immense effect which papal fulminations must have produced on a mass of population sunk in the grossest ignorance and superstition. On this subject see the graphical description of Hume: *History of England*, chap. 12, anno 1207.—*Ed.*

8 . . . . *and it was conceived the state of Venice would have attempted in our days.*] This expectation was in the time of Pope Paul the Fifth, who, by excommunicating that republic, gave occasion to the senate to banish all such of the clergy as would not, by reason of the Pope's command, administer the sacraments; and upon that account the Jesuits were cast out, and never since received into that state.—*K.*

It does not appear, from any account which we have been able to find, that the government or people of Venice had ever any serious intention of changing their religious opinions. On the contrary, they have always been distinguished as the most zealous catholics of Italy, and consequently the most opposed to the tenets of either Calvin or Luther. But it was impossible, from the nature of their government, (the most despotic, perhaps, that ever existed under the name of a republic) to suffer any interference on the part of the Pope, in the administration of their laws, and in the disposal of offices, whether civil or ecclesiastical. "Pour être parfaitement assurée contre les envahissemens de la puissance ecclésiastique, Venise commença par lui ôter toute prétexte d'intervenir dans les affaires de l'état; elle resta invariablement fidèle au dogme. Jamais aucune des *opinions nouvelles* n'y prit la moindre faveur; jamais aucun hérésiarque ne sortit de Venise." *Daru, Traduction d' Uno Discorso Aristocratico sopra il Governo de' Signori Veneziani.* And we find that, as far back as the time of the Crusades, in 1202, the Venetians paid but little attention to the threats of excommunication; when, at the siege of Zara, conducted by the Doge Dandolo in person, at ninety-four years of age, the Pope declared the whole army to be without the pale of the holy church, if they persisted in their enterprise. This threat was entirely disregarded by the Venetians; but the French, who formed a part of the expedition, were obliged to purchase absolution from his holiness at a very dear and mortifying rate; namely, the restoration of all the booty they had obtained at the pillage of Zara. Dandolo, instead of soliciting an accommodation, persisted that the court of Rome had no right to interfere in the measures of the republic; and was supported unanimously in his opinion by the senate, council, and citizens at large.

At the period when the Jesuits had insinuated themselves into almost all the courts and governments of Europe, and, either directly or indirectly, influenced their decisions, Venice, faithful to its principle of excluding every kind of ecclesiastical interference, expelled them from its territory. This happened upon discovering a plan which the society had formed to influence the gondoliers attached to persons of consequence in the state, and by their assistance to obtain, through individuals, the secrets of government, for the purpose of communicating them to the councils of the Vatican, in aid of the views of Paul V, then Pope, whose ideas of supremacy amounted to governing, universally, the temporal as well as the spiritual concerns of Christian princes. Exasperated in no small degree by this severity towards his zealous agents, and shocked at the want of respect to the papal dominion plainly evinced on several other occasions, Paul directed his nuncio to make a severe remonstrance to the Venetian government, and to declare that "he (the holy father) would be happy to sacrifice his life in the defence of his jurisdiction." This declaration was followed up by a most peremptory Bull, dated April 17, 1606; in which his holiness set forth that, if the republic should not make a proper submission in the course of twenty-seven days, it should receive sentence of excommunication. Copies of this Bull were posted up by order of the nuncio in all the streets of the city, and instantly torn down by order of the government. Resentment filled the

between us: by his sentence I stand excommunicated; heretic is the best language he affords me: yet can no ear witness I ever returned to him the name of antichrist, man of sin, or whore of Babylon. It is the method of charity to suffer without reaction: those usual satires and invectives of the pulpit may perchance produce a good effect on the vulgar, whose ears are opener to rhetoric than logic; yet do they, in no wise, confirm the faith of wiser believers, who know that a good cause needs not be patroned by passion, but can sustain itself upon a temperate dispute.

SECT. VI.—I could never divide myself from any man upon the difference of an opinion, or be angry with his judgment for not agreeing with me in that from which, perhaps, within a few days, I should dissent myself.[9] I have no genius to dis-

breasts of every class of citizens against the court of Rome; offers of men and money were poured daily into the senate, to resist these arbitrary proceedings; and even the clergy, in spite of the intrigues of secret agents and the increasing efforts of the nuncio, disregarded the papal authority, and continued to say mass in the churches as before. The monks of the order of St. Bernard offered a hundred and fifty thousand ducats towards the general defence; and, in fine, the most unequivocal spirit was manifested by all ranks and degrees, except the immediate agents of Rome, to support the independence of their country. Under these circumstances, the nuncio had recourse to entreaty; and he conjured the senate to offer some terms of accommodation to the holy father, to avert the dreadful sentence of excommunication: but the Doge, in the following reply, as cited by Daru, left no alternative but an immediate rupture with the holy see. "L'Europe," said he, "ne pourra que désapprouver la rigueur que le pape veut employer contre un peuple qui a toujours montré tant de zèle pour la réligion, et tant de dévouement au saint-siége. Vous conseillez la paix; mais c'est à ceux qui la troublent que vous devez offrir vos conseils. Vous nous exhortez à ne pas nous exposer à de plus grands dangers. Il en est un très-grand, que le pape aurait a craindre, si la république, moins fidèle a ses principes, n'écoutait que son juste ressentiment; ce serait, *qu'elle se séparât elle-même de l'obéissance du saint siége, à l'imitation de tant de peuples qui en ont donné recemment l'exemple.* Faites sentir ce danger au saint-père; engagez-le à écouter des conseils plus pacifiques. Mon âge et mon expérience m'autorisent à vous parler ainsi."—After this formal answer, the Venetian ambassador was recalled from Rome, and the nuncio received orders to quit Venice. The most violent manifestoes were published on each side of the question: nearly the whole of the courts of Europe were, either voluntarily or at the request of the Pope, involved in the dispute; and it was not until the month of April of the following year (1607) that an accommodation was effected, through the mediation of the court of France, which for a time covered the embers of animosity, without entirely extinguishing them. No rejoicings, however, took place on the occasion. Every application for the restoration of the Jesuits was peremptorily refused; and in Venice they have never again been tolerated. It is a curious fact, that Paul V, when only a cardinal, once being in conversation with Leonard Donato, at that time ambassador of Venice at the court of Rome, declared that, if he were Pope, and the republic should give him cause of dissatisfaction, he would not lose his time in manifestoes and negotiations, but would immediately issue his interdict against it. "And I," returned Donato, "if I were Doge, would despise your anathemas." Each of them had his determination put to the proof, by the events which took place.—*Ed.*

9 . . . . *or be angry with his judgment &c.*] I cannot think but, in this expres-

putes in religion; and have often thought it wisdom to decline them, especially upon a disadvantage, or when the cause of truth might suffer in the weakness of my patronage. Where we desire to be informed, 't is good to contest with men above ourselves; but, to confirm and establish our opinions, 't is best to argue[1] with judgments below our own, that the frequent spoils and victories over their reasons may settle in ourselves an esteem and confirmed opinion of our own. Every man is not a proper champion for truth, nor fit to take up the gauntlet in the cause of verity: many, from the ignorance of these maxims, and an inconsiderate zeal unto truth, have too rashly charged the troops of error,[2] and remain as trophies unto the enemies of truth. A man may be in as just possession of truth as of a city, and yet be forced to surrender: 't is therefore far better to enjoy her with peace than to hazard her on a battle. If, therefore, there rise any doubts in my way, I do forget them, or at least defer them, till my better settled judgment and more manly reason be able to resolve them; for I perceive every man's own reason is his best Œdipus, and will, upon a reasonable truce, find a way to loose those bonds wherewith the subtleties of error have enchained our more flexible and tender judgments. In philosophy, where truth seems doublefaced, there is no man more paradoxical than myself: but in divinity I love to keep the road; and, though not in an implicit, yet an humble faith, follow the great wheel of the church, by which I move; not reserving any proper poles, or motion from the epicycle of my own brain. By this means I leave[3] no gap for heresy, schisms, or errors, of which at present, I hope I shall not injure truth to say,[4] I have no

sion, the author had respect to that of that excellent French writer, Monsieur Montaigne, in whom I often trace him. "Combien diversement jugeons-nous de choses? Combien de fois changeons-nous nos fantasies? Ce que je tiens aujourd'hui, et ce que je crois, je le tiens et le crois de toute ma croyance, mais ne m'est-il pas advenu, non une fois, mais cent, mais mille, et tous les jours, d'avoir embrassé quelque autre chose?" *Montaigne, Essais*, liv. ii, chap. 12.—*K.* See note 6, p. 10.—*Ed.*

[1] . . . . *argue*] Thus, *MSS. W. R. & L.* The two *Edts.* of 1642 read, *agree.*—*Ed.*

[2] . . . *many, from the ignorance of these maxims, &c.*] *MS. L.* gives the following reading of this clause:—"many, out of zeal unto truth, more conscious of their desires than abilities, have too rashly charged the troope of errour."—*Ed.*

[3] . . . . *leave*] Thus the two editions of 1642; also those of 1643. 45. 78. 86: but *MSS. W. & R.* and *Edts.* 1672 and 1736 read, *leave.*—*Ed.*

[4] . . . . *of which at present, &c.*] *Edts.* 1642 and the *MSS.* read, "of which at present I shall injure truth to say, &c." See note in § 46, at *jubilee.*—*Ed.*

taint or tincture. I must confess my greener studies have been polluted with two or three; not any begotten in the latter centuries, but old and obsolete, such as could never have been revived but by such extravagant and irregular heads as mine.[5] For, indeed, heresies perish not with their authors; but, like the river Arethusa, though they lose their currents in one place, they rise up again in another.[6] One general council is not able to extirpate one single heresy: it may be cancelled for the present; but revolution of time, and the like aspects from heaven, will restore it, when it will flourish till it be condemned again. For, as though there were a metempsychosis, and the soul of one man passed into another, opinions do find, after certain

5 . . . . *mine.*] The remaining part of this section is not in *MS. L.—Ed.*

6 . . . . *heresies perish not with their authors; but, like the river* Arethusa, *&c.*] Who would not think that this expression were taken from M. Montaigne, pl. 2, *des Ess.* cap. 12, where he hath these words, " Nature enserre dans les termes de son progrès ordinaire, comme toutes autres choses, aussi les créances, les jugements et opinions des hommes; elles ont leur revolutions;" and that Montaigne took his from Tully; " Non enim hominum interitu sententiæ quoque occidunt." *Tull. De Nat. Deorum*, lib. i, c. 5.—*K.*

Here we are compelled to differ from Mr. Keck's opinion; and on the very best grounds:—we have Sir Thomas Browne's authority for asserting that his opinions, however similar to those of the celebrated French essayist, were not borrowed from his writings. Among the miscellaneous papers of our author, preserved in the British Museum, we find the following passage, in his own handwriting. " Some conceits and expressions are common unto divers authors of different countries and ages; and that not by imitation, but coincidence, and concurrence of imagination, fancy, and invention, upon harmony and production. Divers plants have been thought to be peculiar unto some one country; yet, upon better discovery, the same have been found in distant regions, and under all community of parts. Scaliger observes how an Italian poet fell upon the same verse with another; and that one who had never read Martial fell upon a verse in him. Thus it is less strange that Homer should Hebraize, and that many sentences in human authors should seem to have their original in Scripture. In a piece of mine, published long ago, the learned annotator hath parallelled many passages with others in Montaigne's Essays; whereas, to deal clearly, when I penned that piece I had never read these leaves in that author, and scarce any more ever since."—*Ed.*

Of the river *Arethusa*, thus Seneca: " Videbis celebratissimum carminibus fontem Arethusam nitidissimi ac perlucidi ad imum stagni, gelidissimas aquas profundentem: sive illas ibi primum nascentes invenit, sive immersum terris flumen integrum subter tot maria, et a confusione pejoris undæ servatum, reddidit." *Senec. De Consolat. ad Martiam*, cap. 17.—*K.*

The Annotator might, more aptly for the illustration of Sir Thomas Browne's allusion, have quoted *Seneca, Natural. Quest.* lib. iii, cap. 26. See also *Strabo*, lib. vi, cap. 2, § 4. Swinborne, in his *Travels in the Two Sicilies*, vol. ii, p. 330, describes the situation of the fountain Arethusa; but remarks that " rubbish chokes up its wholesome sources; the waves have found a passage through the rocks, which repeated earthquakes have split; and not a fish is to be seen in it. Sometimes, after an earthquake, it has been left dry, and, at other times, the whole mass of its waters has been tainted with subterraneous effluvia. Its fountain-head probably lies among the neighbouring hills. Not Arethusa alone, but all the surrounding objects, imprint a melancholy sensation on the mind, while it draws a comparison between the present humble state of things and their once flourishing condition."—*Ed.*

revolutions, men and minds like those that first begat them. To see ourselves again, we need not look for Plato's year:* every man is not only himself; there have been many Diogeneses, and as many Timons, though but few of that name; men are lived over again; the world is now as it was in ages past; there was none then, but there hath been some one since, that parallels him, and is, as it were, his revived self.

SECT. VII.—Now, the first of mine was that of the Arabians;[7] that the souls of men perished with their bodies, but should yet be raised again at the last day: not that I did absolutely conceive a mortality of the soul, but, if that were, (which faith, not philosophy, hath yet thoroughly disproved,) and that both entered the grave together, yet I held the same conceit thereof that we all do of the body, that it rise again. Surely it is but the merits of our unworthy natures, if we sleep in darkness until the last alarm. A serious reflex upon my own unworthiness did make me backward from challenging this prerogative of my soul: so that I might enjoy my Saviour at the last, I could with patience be nothing almost unto eternity. The second was that of Origen;[8] that God would not persist in his

* A revolution of certain thousand years, when all things should return unto their former estate, and he be teaching again in his school, as when he delivered this opinion.

[7] *Now, the first of mine was that of the Arabians;*] For this heresy, the author here showeth what it was: they are called Arabians from the place where it was fostered, and because the heresiarch was not known. Eusebius, St. Augustine, and Nicephorus, do all write of it. The reason of this heresy was so specious, that it drew Pope John XXII to be of the same persuasion.—*K.*

"It was not only in the point now mentioned, that the doctrine of the gospel suffered, at this time, from the erroneous fancies of wrongheaded doctors. For there sprang up now, in Arabia, a certain sort of minute philosophers, the disciples of a master whose obscurity has concealed him from the knowledge of after-ages, who denied the immortality of the soul, and believed that it perished with the body; but maintained, at the same time, that it was to be recalled to life with the body, by the power of God. The philosophers, who held this opinion, were called Arabians, from their country. Origen was called from Egypt, to make head against this rising sect; and disputed against them, in a full council, with such remarkable success, that they abandoned their erroneous sentiments, and returned to the received doctrine of the church." *Mosheim, Eccl. Hist.* vol. i, ch. 5, § 16, p. 307. Such is the brief account which Mosheim gives of this heresy. For the account of its adoption by Pope John XXII, see *Bower's History of the Popes*, vol. vi, p. 441.—*Ed.*

[8] *The second was that of* Origen;] Besides Saint Augustine, Epiphanius and Saint Hierom relate that Origen held that, not only the souls of men, but the devils themselves, should be discharged from tortures after a certain time: but Genebrard endeavours to clear him of this. Vide *Coquæum, in Aug. De Civ. Dei*, lib. xxi., c. 17.—*K.*

For *Origen*, the Editions of 1642 read, *the Chiliast*; *MSS. W. & L.* read, *the Chiliasts*; and *MS. L. the Origenists and Chiliasts.*—*Ed.*

vengeance for ever, but, after a definite time of his wrath, would release the damned souls from torture: which error I fell into upon a serious contemplation of the great attribute of God, his mercy; and did a little cherish it in myself, because I found therein no malice, and a ready weight to sway me from the other extreme of despair, whereunto melancholy and contemplative natures are too easily disposed. A third there is, which I did never positively maintain or practise, but have often wished it had been consonant to truth, and not offensive to my religion;[9] and that is, the prayer for the dead;[1] whereunto I was inclined from some charitable inducements, whereby I could[2] scarce contain my prayers for a friend at the ringing of a bell, or behold his corpse without an orison for his soul. 'T was a good way, methought, to be remembered by posterity, and far more noble than a history. These opinions I never maintained with pertinacity, or endeavoured to inveigle any man's belief unto mine, nor so much as ever revealed,[3] or disputed them with my dearest friends; by which means I neither propagated them in others, nor confirmed them in myself; but, suffering them to flame upon their own substance, without addition of new fuel, they went out insensibly of themselves: therefore these opinions, though condemned by lawful councils, were not heresies in me, but bare errors, and single lapses of my understanding, without a joint depravity of my will. Those have not only depraved understandings, but diseased affections, which cannot enjoy a singularity without a heresy, or be the author of an opinion without they be of a sect also.[4] This was the villany of the first schism of Lucifer; who was not content to err alone, but drew into his faction

9 . . . *and not offensive to my religion;*] This clause is not in *MS. R.*—*Ed.*

1 . . . . *prayer for the dead;*] The *De Profundis* of the Roman church. Dr. Johnson is evidently inclined to our author's sentiments on this head, and remarks that the prayer for the dead is proper, if it be once established that there are souls in purgatory. When we read the remarkable prayer of Johnson for his deceased wife, recorded by Boswell, vol. i, p. 214, and some passages in the Commonplace-Book of the same author, we may readily believe that he had often in view the opinions of Browne, as well as his style.—*Ed.*

2 . . . . *from some charitable inducements, whereby I could*] Instead of this clause I find the following, in the *Edts.* 1642 and *MSS. W. L. & R.*; viz. "by an excess of charity, whereby I thought the living too small an object *of devotion*, I could"—with only this variation; that *MSS. L. & R.* read, *for my devotion.*—*Ed.*

3 . . . . *nor so much as ever revealed,*] Not in *MS. R.*—*Ed.*

4 . . . . *of a sect also.*] In *MS. L.* the section ends here.—*Ed.*

many legions of spirits; and upon this experience he tempted only Eve, well understanding the communicable nature of sin, and that to deceive but one was tacitly and upon consequence to delude them both.

SECT. VIII.[5]—That heresies should arise, we have the prophecy of Christ; but, that old ones should be abolished, we hold no prediction. That there must be heresies, is true, not only in our church, but also in any other: even in the doctrines heretical there will be superheresies; and Arians, not only divided from the church, but also among themselves: for heads that are disposed unto schism, and complexionally propense to innovation, are naturally disposed for a community; nor will be ever confined unto the order or economy of one body; and therefore, when they separate from others, they knit but loosely among themselves; nor contented with a general breach or dichotomy with their church, do subdivide and mince themselves almost into atoms. 'T is true, that men of singular parts and humours have not been free from singular opinions and conceits in all ages; retaining something, not only beside the opinion of their own church, or any other, but also any particular author; which, notwithstanding, a sober judgment may do without offence or heresy; for there are yet, after all the decrees of councils, and the niceties of the schools, many things, untouched, unimagined, wherein the liberty of an honest reason may play and expatiate with security, and far without the circle of a heresy.

SECT. IX.—As for those wingy mysteries in divinity, and airy subtleties in religion, which have unhinged the brains of better heads, they never stretched the *pia mater* of mine. Methinks there be not impossibilities enough in religion for an active faith: the deepest mysteries ours contains have not only been illustrated, but maintained, by syllogism and the rule of reason. I love to lose myself in a mystery; to pursue my reason to an *O altitudo!* 'T is my solitary recreation to pose my apprehension with those involved enigmas and riddles of the Trinity—incarnation and resurrection. I can answer all the objections of Satan and my rebellious reason with that

[5] *Sect.* VIII.] This section is not in *Edts.* 1642, nor in *MSS. W. R. & L.*—*Ed.*

odd resolution I learned of Tertullian, *Certum est quia impossibile est.* I desire to exercise my faith in the difficultest point; for, to credit ordinary and visible objects, is not faith, but persuasion. Some believe the better for seeing Christ's sepulchre; and, when they have seen the Red Sea, doubt not of the miracle.[6] Now, contrarily, I bless myself, and am thankful, that I lived not in the days of miracles; that I never saw Christ nor his disciples. I would not have been one of those Israelites that passed the Red Sea; nor one of Christ's patients, on whom he wrought his wonders: then had my faith been thrust upon me; nor should I enjoy that greater blessing pronounced to all that believe and saw not. 'T is an easy and necessary belief, to credit what our eye and sense hath examined. I believe he was dead, and buried, and rose again; and desire to see him in his glory, rather than to contemplate him in his cenotaph or sepulchre. Nor is this much to believe: as we have reason, we owe this faith unto history: they only had the advantage of a bold and noble faith, who lived before his coming, who, upon obscure prophecies and mystical types, could raise a belief, and expect apparent impossibilities.

Sect. x.—'T is true, there is an edge in all firm belief, and with an easy metaphor we may say, the sword of faith; but in these obscurities I rather use it in the adjunct the apostle gives it, a buckler; under which I conceive a wary combatant may lie invulnerable. Since I was of understanding to know that we know nothing, my reason hath been more pliable to the will of faith: I am now content to understand a mystery, without a rigid definition, in an easy and Platonic description. That allegorical description of Hermes* pleaseth me beyond all the metaphysical definitions of divines. Where I cannot satisfy my reason, I love to humour my fancy: I had as lieve you tell me that *anima est angelus hominis, est corpus*

* "Sphæra cujus centrum ubique, circumferentia nullibi."

6 . . . . *and, when they, &c.*] Those that have seen it have been better informed than Sir Henry Blount was: for he tells us that he desired to view the passage of Moses into the Red Sea, (not being above three days' journey off;) but the Jews told him, the precise place was not known within less than the space of a day's journey along the shore; "wherefore (saith he) I left that, as too uncertain for my observation." *Blount's Voyage into the Levant.*—*K.*

Dei, as ἐντελέχεια;—*lux est umbra Dei*, as *actus perspicui*. Where there is an obscurity too deep for our reason, 't is good to sit down with a description, periphrasis, or adumbration; for, by acquainting our reason how unable it is to display the visible and obvious effects of nature, it becomes more humble and submissive unto the subtleties of faith:[7] and thus I teach my haggard and unreclaimed reason to stoop unto the lure of faith. I believe there was already a tree, whose fruit our unhappy parents tasted, though, in the same chapter where God forbids it, 't is positively said, the plants of the field were not yet grown; for God had not caused it to rain upon the earth.[8] I believe that the serpent, (if we shall literally understand it,) from his proper form and figure, made his motion on his belly, before the curse.[9] I find the trial of the pucelage and virginity of women, which God ordained the Jews, is very fallible. Experience and history informs me that, not only many particular women, but likewise whole nations, have escaped the curse of childbirth, which God seems to pronounce upon the whole sex; yet do I believe that all this is true, which, indeed, my reason would persuade me to be false; and this, I think, is no vulgar part of faith, to believe a thing not only above, but contrary to, reason, and against the arguments of our proper senses.

Sect. xi.—In my solitary and retired imagination *(neque enim cum porticus aut me lectulus accepit, desum mihi)* I remember I am not alone; and therefore forget not to contemplate him and his attributes, who is ever with me, especially those two mighty ones, his wisdom and eternity. With the one I recreate, with the other I confound, my understanding: for who can speak of eternity without a solecism, or think there-

7 . . . . *subtleties of faith:*] The rest of the section is not in *MS. L.—Ed.*

8 . . . . *for God had not caused it to rain upon the earth.*] St. Augustine, *De Genes. ad Literam*, cap. 5, 6, salves that expression from any inconvenience; but the author, in *Pseudodox. Epidemic.* lib. vii, cap. 1, shows that we have no reason to be confident that this fruit was an apple. —*K.*

9 *I believe that the serpent (if we shall literally understand it), from his proper form and figure, made his motion on his belly before the curse.*] Yet the author himself showeth, in *Pseudodox. Epidemic.* lib. vii, cap. 1, that the form or kind of the serpent is not agreed on: yet Comestor affirmed it was a dragon; Eugubinus, a basilisk; Delrio, a viper; and others, a common snake: but, of what kind soever it was, he showeth in the same volume, lib. v, cap. 4, that there was no inconvenience that the temptation should be performed in this proper shape.—*K.*

of without an ecstasy?[1] Time we may comprehend; 't is but five days older than ourselves, and hath the same horoscope with the world;[2] but, to retire so far back as to apprehend a beginning,—to give such an infinite start forwards as to conceive an end,—in an essence that we affirm hath neither the one nor the other, it puts my reason to St. Paul's sanctuary: my philosophy dares not say the angels[3] can do it. God hath not made a creature that can comprehend him; 't is a privilege of his own nature: "I am that I am" was his own definition unto Moses; and 't was a short one to confound mortality, that durst question God, or ask him what he was. Indeed, he only is; all others have and shall be:[4] but, in eternity, there is no distinction of tenses; and therefore that terrible term, predestination, which hath troubled so many weak heads to conceive, and the wisest to explain, is in respect to God no prescious determination of our estates to come, but a definitive blast of his will already fulfilled, and at the instant that he first decreed it; for, to his eternity, which is indivisible, and altogether, the last trump is already sounded, the reprobates in the flame, and the blessed in Abraham's bosom. St. Peter[5] speaks modestly, when he saith, "a thousand years to God are but as one day:" for, to speak like a philosopher, those continued instances of time, which flow into a thousand years, make not to him one moment. What to us is to come, to his eternity is present;[6] his whole duration being but one permanent point, without succession, parts, flux, or division.

Sect. xii.—There is no attribute that adds more difficulty to the mystery of the Trinity, where, though in a relative way of Father and Son, we must deny a priority. I wonder how Aristotle could conceive the world eternal, or how he could make good two eternities. His similitude, of a triangle comprehended in a square, doth somewhat illustrate the trinity of our souls, and that the triple unity of God; for there is in us

1 . . . . *without an ecstasy?*] *MS. L.* reads "*under* an ecstasy;" in the sense of "*with less than* an ecstasy."—*Ed.*

2 . . . . *with the world;*] These words not in *Edts.* 1642, nor *MSS. W. & R.*—*Ed.*

3 . . . *the angels*] So the authorized editions and *MS. W.*; *Edts.* 1642 read, *the apostles; MS. R.* reads, *that angels.*—*Ed.*

4 . . . . *he only is; &c.*] *Edts.* 1642, and *MS. W.* read thus; "he only is what others have and shall be:"—*Ed.*

5 *St. Peter*] So all the *Edts.* The *MSS.* all erroneously read, St. Paul.—*Ed.*

6 . . . *present;*] *past* in *MS. L.*—*Ed.*

not three, but a trinity of, souls;[7] because there is in us, if not three distinct souls, yet differing faculties, that can and do subsist apart in different subjects, and yet in us are thus united as to make but one soul and substance. If one soul were so perfect as to inform three distinct bodies, that were a petty trinity.[8] Conceive the distinct number of three, not divided nor separated by the intellect, but actually comprehended in its unity, and that is a perfect trinity. I have often admired the mystical way of Pythagoras,[9] and the secret magick of numbers.[1] "Beware of philosophy," is a precept not to be received in too large a sense:[2] for, in this mass of nature, there is a set of things that carry in their front, though not in capital letters, yet in stenography and short characters, something of divinity; which, to wiser reasons, serve as luminaries in the abyss of knowledge,[3] and, to judicious beliefs, as scales and rundles to mount the pinnacles and highest pieces of divinity. The severe schools shall never laugh me out of the philosophy of Hermes, that this visible world is but a picture of the invisible, wherein, as in a portrait, things are not truly, but in equivocal shapes, and as they counterfeit some real substance in that invisible fabrick.

SECT. XIII.—That other attribute, wherewith I recreate my devotion, is his wisdom, in which I am happy; and for the

7 . . . . *there is in us* not three, but *a trinity of, souls;*] The Peripatetics held that men had three distinct souls: whom the hereticks, the Anomœi, and the Jacobites, followed. There arose a great dispute about this matter in Oxford, in the year 1276; and it was then determined against Aristotle. *Danæus Christ. Eth.* lib. i, cap. 4; and *Suarez*, in his treatise *De Causa Formali, quæst. An dentur plures formæ in uno composito?* affirmeth there was a synod that did anathematize all who held with Aristotle on this point.—*K.*

MS. W. reads, "not three distinct souls, but &c."—*Ed.*

8 . . . . *petty trinity.*] So *MS. R.*—*Edts.* 1642, and *MS. W.* read, *pretty trinity.*—*Ed.*

9 *I have often admired the mystical way of Pythagoras,*] "On peut lire en Plutarque, *De Iside, et Osiride*, comment Pythagore nommoit et expliquoit le chiffre avec les noms des Dieux: on peut lire aussi, comment il apprenoit à ses disciples à jurer par le chiffre, dans ces fictions ou sentences dorées qu'il nous a laissées."—*Fr. Tr.*

1 . . . . *and the secret magick of numbers.*] Moltkenius refers this to algebra and cabbala; and after quoting, on the latter subject, several authors, concludes thus: "Optime de ea scripsit Rabbi Joseph Bar Abraam, in libro cui titulus, *Hortus Noæ.* De hac numerorum magia vide et *Rob. Flud. in Hist. Microcosmi;* tractat ibi multis, de magnis numerorum mysteriis."—*M.*

See the article Cabbala in the *Encyclopédie Méthodique.*—*Ed.*

2 . . . . *in too large a sense:*] *Edts.* 1642 and *MSS. W. L. & R.* read, "in a narrow sense;"—*Ed.*

3 . . . . *luminaries in the abyss of knowledge,*] ". . . luminaries in the *A B C* of knowledge," in *MS. L.*—*Ed.*

contemplation of this only do not repent me that I was bred in the way of study. The advantage I have of the vulgar, with the content and happiness I conceive therein, is an ample recompense for all my endeavours, in what part of knowledge soever.[4] Wisdom is his most beauteous attribute: no man can attain unto it: yet Solomon pleased God when he desired it. He is wise, because he knows all things; and he knoweth all things, because he made them all: but his greatest knowledge is in comprehending that he made not, that is, himself. And this is also the greatest knowledge in man. For this do I honour my own profession, and embrace the counsel even of the devil himself: had he read such a lecture in Paradise as he did at Delphos,* we had better known ourselves; nor had we stood in fear to know him.[4] I know God is wise in all; wonderful in what we conceive, but far more in what we comprehend not: for we behold him but asquint, upon reflex or shadow; our understanding is dimmer[5] than Moses's eye; we are ignorant of the back parts or lower side of his divinity; therefore, to pry into the maze of his counsels, is not only folly in man, but presumption even in angels.[6] Like us, they are his servants, not his senators;[7] he holds no counsel, but that mystical one of the Trinity, wherein, though there be three persons, there is but one mind that decrees without contradiction. Nor needs he any; his actions are not begot with deliberation; his wisdom naturally knows what's best: his intellect stands ready fraught with the superlative and purest ideas of goodness: consultation and election, which are two motions in us, make but one in him: his actions springing from his power at the first touch of his will. These are contemplations metaphysical: my humble speculations have another method, and are content to trace and discover those expressions he hath left in[8] his creatures, and the obvious

* Γνῶθι σεαυτὸν. Nosce teipsum.

4 . . . . *knowledge soever.*] The whole of the succeeding passage, as far as the corresponding reference, is omitted in *Edts.* 1642, and in *MSS. W. & R.*—*Ed.*

5 . . . . *dimmer*] So in *MSS. W. & R.*; but *Edts.* 1642 read, *diviner.*—*Ed.*

6 . . . . *in angels.*] After these words, *MS. L.* adds the following clause: "there is no thread or line to guide us in that labyrinth."—*Ed.*

7 . . . . *not his senators;*] *Edts.* 1642 alone read, *not servators.*—*Ed.*

8 . . . . *expressions he hath left in*] So all the Editions. The passage stands thus, ". . . impressions he hath left on," in the *MSS. W. L. & R.*—*Ed.*

effects of nature. There is no danger to profound[9] these mysteries, no *sanctum sanctorum* in philosophy.[1] The world was made to be inhabited by beasts, but studied and contemplated by man:[2] 't is the debt of our reason we owe unto God, and the homage we pay for not being beasts. Without this, the world is still as though it had not been, or as it was before the sixth day, when[3] as yet there was not a creature that could conceive or say there was a world. The wisdom of God receives small honour from those vulgar heads that rudely stare about, and with a gross rusticity admire his works. Those highly[4] magnify him, whose judicious inquiry into his acts, and deliberate research into his creatures, return the duty of a devout and learned admiration.[5] Therefore,

> Search while thou wilt; and let thy reason go,
> To ransom truth, e'en to th' abyss below;
> Rally the scattered causes; and that line
> Which nature twists be able to untwine.
> It is thy Maker's will; for unto none
> But unto reason can he e'er be known.
> The devils do know thee; but those damn'd meteors
> Build not thy glory, but confound thy creatures.
> Teach my endeavours so thy works to read,
> That learning them in thee I may proceed.
> Give thou my reason that instructive flight,
> Whose weary wings may on thy hands still light.
> Teach me to soar aloft, yet ever so,
> When near the sun, to stoop again below.
> Thus shall my humble feathers safely hover,
> And, though near earth, more than the heav'ns discover.
> And then at last, when homeward I shall drive,
> Rich with the spoils of nature, to my hive,
> There will I sit, like that industrious fly,
> Buzzing thy praises; which shall never die
> Till death abrupts them, and succeeding glory
> Bid me go on in a more lasting story.

And this is almost all wherein an humble creature may endeavour to requite, and some way to retribute unto his Creator: for, if not he that saith, Lord, Lord, but he that doeth the will of the Father, shall be saved, certainly our wills must

9 . . . . *profound*] *Edts.* 1642 and the *MSS.* read, *propound.—Ed.*

1 . . . . *sanctum sanctorum &c.*] *MS. L.* reads, "salvation in philosophy."—*Ed.*

2 *The world &c.*] In *MS. L.* this clause is thus: "The world was made not so much to be inhabited by men, as to be contemplated, studied, and known, by man."—*Ed.*

3 . . . . *as it was before the sixth day, when*] *Edts.* 1642 read, ". . . . as it was before, at the first, when."—*Ed.*

4 *Those highly*] *Those only*, in *MS. W.*—*Ed.*

5 . . . . *and learned admiration.*] The succeeding verses and concluding paragraph of the section are not in *Edts.* 1642, nor in the *MSS. W. L. & R.*—*Ed.*

be our performances, and our intents make out our actions; otherwise our pious labours shall find anxiety in our graves, and our best endeavours not hope, but fear, a resurrection.

Sect. xiv.—There is but one first cause, and four second causes, of all things.[6] Some are without efficient, as God; others without matter, as angels; some without form, as the first matter: but every essence, created or uncreated, hath its final cause, and some positive end both of its essence and operation. This is the cause I grope after in the works of nature; on this hangs the providence of God. To raise so beauteous a structure as the world and the creatures thereof was but his art; but their sundry and divided operations, with their predestinated ends, are from the treasury of his wisdom. In the causes, nature, and affections, of the eclipses of the sun and moon, there is most excellent speculation;[7] but, to profound farther, and to contemplate a reason why his providence hath so disposed and ordered their motions in that vast circle, as to conjoin and obscure each other, is a sweeter piece of reason, and a diviner point of philosophy. Therefore, sometimes, and in some things,[8] there appears to me as much divinity in Galen his books, *De Usu Partium*, as in Suarez's Metaphysicks. Had Aristotle been as curious in the inquiry of this cause as he was of the other, he had not left behind him an imperfect piece of philosophy, but an absolute tract of divinity.

Sect. xv.—*Natura nihil agit frustra*, is the only indisputable axiom in philosophy. There are no grotesques in nature; not any thing framed to fill up empty cantons, and unnecessary spaces. In the most imperfect creatures, and such as were not preserved in the ark, but, having their seeds and principles in the womb of nature, are every where, where the power of the sun is,—in these is the wisdom of his hand discovered.

6 *There is but one first cause, and four second causes, of all things.*] Namely, *efficient*, *material*, *formal*, and *final*: to which, as Keck remarks in his note on this passage, Plato adds, for a fifth, *exemplar* or *idea*. See also *Boethius De Consolatione*, lib. iii, met. 9, and *St. Augustine*, lib. lxxxiii, quæst. 46. Mr. Nat. Carpenter, in his *Philosophia Libera*, affirmeth, there is no such cause as that which they call the *final cause*.—See *Carpenter, Philosophia Libera*, Decad. iii, Exercit. 5.—*Ed.*

7 . . . . *most excellent speculation;*] Add, "and most sweet philosophy;" from *MS. L.*—*Ed.*

8 . . . . *sometimes, and in some things,*] Not in *MSS. W. & R.*—*Ed.*

Out of this rank Solomon chose the object of his admiration; indeed, what reason may not go to school to the wisdom of bees, ants, and spiders? What wise hand teacheth them to do what reason cannot teach us?[9] Ruder heads stand amazed at those prodigious pieces of nature, whales, elephants, dromedaries, and camels; these, I confess, are the colossuses and majestick pieces of her hand; but in these narrow engines there is more curious mathematicks; and the civility of these little citizens more neatly sets forth the wisdom of their Maker. Who admires not Regio Montanus his fly beyond his eagle;[1] or wonders not more at the operation of two souls in those little bodies than but one in the trunk of a cedar?[2] I could never content my contemplation with those general pieces of wonder, the flux and reflux of the sea, the increase of Nile, the conversion of the needle to the north; and have studied to match and parallel those in the more obvious and neglected pieces of nature, which, without farther travel, I can do in the cosmography of myself. We carry with us the wonders we seek without us: there is all Africa and her prodigies in us. We are that bold and adventurous piece of nature, which he that studies wisely learns, in a compendium, what others labour at in a divided piece and endless volume.

Sect. xvi.—Thus there are two books from whence I collect my divinity. Besides that written one of God, another of his servant, nature, that universal and publick manuscript, that lies expansed[3] unto the eyes of all. Those that never saw him in the one have discovered him in the other: this was the scripture and theology of the heathens; the natural motion of the sun made them more admire him than its supernatural

9 *What wise hand teacheth &c.*] This sentence is omitted in *MS. L.*—*Ed.*

1 *Who admires not &c.*] Du Bartas celebrates the eagle and fly of Regio Montanus, in his Poem; 6me jour, 6me semaine.—*Ed.*

2 . . . . *or wonders not more at the operation of two souls in those little bodies than but one in the trunk of a cedar?*] That is, the vegetative; which, according to the common opinion, is supposed to be in trees, though the Epicureans and Stoicks would not allow any soul in plants; but Empedocles and Plato allowed them not only a vegetative soul, but affirmed them to be animals. The Manichees went farther, and attributed so much of the rational soul to them, that they accounted it homicide to gather either the flowers or fruit, as St. Augustine reports.—*K.*

In *MS. L.* this clause is added; "—or what wise man teacheth them to do, what nature cannot teach us?"—*Ed.*

3 . . . . *expansed*] Thus, in *MS. W.*; *exposed*, in *Edts.* 1642 and in *MS. L.*; *expounded* in *MS. R.*—*Ed.*

station did the children of Israel.[4] The ordinary effects of nature wrought more admiration in them than, in the other, all his miracles. Surely the heathens knew better how to join and read these mystical letters than we Christians, who cast a more careless eye on these common hieroglyphics, and disdain to suck divinity from the flowers of nature. Nor do I so forget God as to adore the name of nature; which I define not, with the schools, to be the principle of motion and rest, but that straight and regular line, that settled and constant course the wisdom of God hath ordained the actions of his creatures, according to their several kinds. To make a revolution every day is the nature of the sun, because of that necessary course which God hath ordained it, from which, by a faculty from that voice which first did give it motion, it cannot swerve.[5] Now this course of nature God seldom alters or perverts; but, like an excellent artist, hath so contrived his work, that, with the self-same instrument, without a new creation, he may effect his obscurest designs. Thus he sweeteneth the water with a wood,[6] preserveth the creatures in the ark,[7] which the blast of his mouth might have as easily created; —for God is like a skilful geometrician, who, when more easily, and with one stroke of his compass, he might describe or divide a right line, had yet rather do this in a circle or longer way, according to the constituted and forelaid[8] principles of his art: yet this rule of his he doth sometimes pervert, to acquaint the world with his prerogative, lest the arrogancy of our reason should question his power, and conclude he could not.[9] And thus I call the effects of nature the works of God, whose hand and instrument she only is; and therefore, to ascribe his actions unto her is to devolve the honour of the principal agent upon the instrument; which if with reason we may do,

4 . . . . *did the children of Israel.*] *MS. L.* gives this very singular reading, ". . . . did the *wild* Israelites."—*Ed.*

5 . . . . *from which*, by a faculty from that voice *which &c.*] We have ventured to transpose this sentence. In all the editions it is thus arranged, ". . . . from which it cannot swerve, by a faculty from that voice &c."

The *Edts.* 1642 read, "by the faculty of the voice &c." *MSS. W. & R.* read, "by the faculty of that voice &c."—*Ed.*

6 . . . . *with a wood,*] See *Exod.* xv, 25. In *MS. R.* the words *with a wood* are omitted. *Edts.* 1672 and 78 read, *word.* —*Ed.*

7 . . . . *ark,*] See *Gen.* vii, viii.—*Ed.*

8 . . . . *forelaid*] Thus in *MS. W.*; *foresaid*, in *MS. L.*; *aforesaid*, in *Edts.* 1642. —*Ed.*

9 . . . . *could not.*] The remainder of the section is wanting in *MS. L.*—*Ed.*

then let our hammers rise up and boast they have built our houses, and our pens receive the honour of our writings. I hold there is a general beauty in the works of God, and therefore no deformity in any kind of species or creature whatsoever. I cannot tell by what logick we call a toad, a bear, or an elephant, ugly; they being created in those outward shapes and figures which best express the actions of their inward forms; and having passed that general visitation of God, who saw that all that he had made was good, that is, conformable to his will, which abhors deformity, and is the rule of order and beauty. There is no deformity but in monstrosity; wherein, notwithstanding, there is a kind of beauty; nature so ingeniously contriving the irregular parts, as they become sometimes more remarkable than the principal fabrick. To speak yet more narrowly, there was never any thing ugly or mis-shapen, but the chaos; wherein, notwithstanding, to speak strictly, there was no deformity, because no form; nor was it yet impregnate[1] by the voice of God. Now, nature is not at variance with art, nor art with nature; they being both the servants of his providence. Art is the perfection of nature. Were the world now as it was the sixth day, there were yet a chaos. Nature hath made one world, and art another. In brief, all things are artificial; for nature is the art of God.[2]

Sect. xvii.—This is the ordinary and open way of his providence, which art and industry have in a good part discovered; whose effects we may foretell without an oracle. To foreshew these is not prophecy, but prognostication.[3] There is another way, full of meanders and labyrinths, whereof the devil and spirits have no exact ephemerides; and that is a more particular and obscure method of his providence; directing the operations of individual and single essences: this we call fortune; that serpentine and crooked line, whereby he draws those actions his wisdom intends in a more unknown and secret way: this cryptic and involved method of his pro-

[1] . . . . *nor was it yet impregnate*] In *Edts.* 1642, these words are omitted. In *MSS. W. & R.* there is a blank instead of them;—thus: "because no form . . . . . by the voice of God."—*Ed.*

[2] . . . . *for nature is the art of God.*] Hobbes has adopted these very words in the first line of his introduction to *Leviathan; or the Matter, Form, and Power, of a Commonwealth, &c.*—*Ed.*

[3] . . . . *prognostication.*] " . . . a bare prognostication" in *MS. L.*—*Ed.*

vidence have I ever admired; nor can I relate the history of my life, the occurrences of my days, the escapes, or dangers, and hits of chance, with a *bezo las manos* to Fortune, or a bare gramercy to my good stars. Abraham might have thought the ram in the thicket came thither by accident: human reason would have said, that mere chance conveyed Moses in the ark to the sight of Pharoah's daughter. What a labyrinth is there in the story of Joseph! able to convert a stoick. Surely there are in every man's life certain rubs, doublings and wrenches, which pass a while under the effects of chance; but at the last, well examined, prove the mere hand of God. 'T was not dumb chance that, to discover the fougade, or powder-plot, contrived a miscarriage in the letter.[4] I like the victory of 88 the better for that one occurrence which our enemies imputed to our dishonour, and the partiality of fortune; to wit, the tempests and contrariety of winds. King Philip did not detract from the nation, when he said, he sent his armada to fight with men, and not to combat with the winds. Where there is a manifest disproportion between the powers and forces of two several agents, upon a maxim of reason we may promise the victory to the superiour: but when unexpected accidents slip in, and unthought-of occurrences intervene, these must proceed from a power that owes no obedience to those axioms; where, as in the writing upon the wall, we may behold the hand, but see not the spring that moves it. The success of that petty province of Holland (of which the Grand Seignior proudly said, if they should trouble him, as they did the Spaniard, he would send his men with shovels and pick-axes, and throw it into the sea) I cannot altogether ascribe to the ingenuity and industry of the people, but the mercy of God, that hath disposed them to such a thriving genius; and to the will of his providence, that dispenseth his favour[5] to

[4] *'T was not dumb chance that, to discover the* fougade, *or powder plot, contrived a miscarriage in the letter.*] In the *Edts.* 1642, and *MSS. W. & R.*, this sentence stands thus: "'T was not a mere chance to discover the or powder treason, by a miscarriage of the letter."

The term *fougade* is thus explained in Todd's Johnson: "a sort of little mine in the manner of a well, scarce more than ten feet wide, and twelve deep, dug under some work or fortification, and charged with barrels or sacks of gunpowder to blow it up, and covered over with earth."—*Ed.*

[5] . . . . *dispenseth his favour*] Thus *MS. R. & L.* It is evidently the better reading; and is therefore adopted, though against *MS. W.* and all the editions, which have, "disposeth her favour."—*Ed.*

each country in their preordinate season. All cannot be happy at once; for, because the glory of one state depends upon the ruin of another, there is a revolution and vicissitude of their greatness, and must obey the swing of that wheel,[6] not moved by intelligences, but by the hand of God, whereby all estates arise to their zenith and vertical points, according to their predestinated periods. For the lives, not only of men, but of commonwealths and the whole world, run not upon a helix that still enlargeth; but on a circle, where, arriving to their meridian, they decline in obscurity, and fall under the horizon again.

Sect. xviii.—These must not therefore be named the effects of fortune[7] but in a relative way, and as we term the works of nature. It was the ignorance of man's reason that begat this very name, and by a careless term miscalled the providence of God: for there is no liberty for causes to operate in a loose and straggling way; nor any effect whatsoever but hath its warrant from some universal or superiour cause. 'T is not a ridiculous devotion to say a prayer before a game at tables; for, even in sortileges and matters of greatest uncertainty, there is a settled and preordered course of effects. It is we that are blind, not fortune. Because our eye is too dim to discover the mystery of her effects, we foolishly paint her blind, and hoodwink the providence of the Almighty. I cannot justify that contemptible proverb, that "fools only are fortunate;" or that insolent paradox, that "a wise man is out of the reach of fortune;" much less those opprobrious epithets of poets,—whore, bawd, and strumpet.[8] 'T is, I confess, the common fate of men of singular gifts of mind, to be destitute of those of fortune; which doth not any way deject the spirit of wiser judgments, who thoroughly understand the justice of this proceeding; and, being enriched with higher donatives, cast a more careless eye on these vulgar parts of felicity. It is a most unjust ambition, to desire to engross the mercies of the Almighty, not to be content with the goods of mind,

6 . . . . *for because the glory &c.*] In *MS. L.* the passage stands thus: ". . . for, besides that the glory of one state depends upon the ruin of another, there is a revolution and vicissitude of their greatness, which must obey the swing of that wheel."—*Ed.*

7 . . . . *fortune*] *nature*, in *Edts.* 1642, and in *MSS. W. & R.*—*Ed.*

8 . . . . *much less &c.*] In *MS. L.*, the passage stands thus, "much less that scurrilous language of poets, that Fortune is a whore, a bawd, a strumpet."—*Ed.*

without a possession of those of body or fortune: and it is an errour, worse than heresy, to adore these complimental and circumstantial pieces of felicity, and undervalue those perfections and essential points of happiness, wherein we resemble our Maker. To wiser desires it is satisfaction enough to deserve, though not to enjoy, the favours of fortune. Let Providence provide for fools: 'tis not partiality, but equity, in God, who deals with us but as our natural parents. Those that are able of body and mind he leaves to their deserts; to those of weaker merits he imparts a larger portion; and pieces out the defect of one by the excess of the other. Thus have we no just quarrel with nature for leaving us naked; or to envy the horns, hoofs, skins and furs of other creatures; being provided with reason, that can supply them all. We need not labour, with so many arguments, to confute judicial astrology; for, if there be a truth therein, it doth not injure divinity. If to be born under Mercury disposeth us to be witty; under Jupiter to be wealthy; I do not owe a knee unto these, but unto that merciful hand that hath ordered my indifferent and uncertain nativity unto such benevolous aspects. Those that hold, that all things are governed by fortune, had not erred, had they not persisted there. The Romans, that erected a temple to Fortune, acknowledged therein, though in a blinder way, somewhat of divinity; for, in a wise supputation, all things begin and end in the Almighty. There is a nearer way to heaven than Homer's chain;[9] an easy logick may conjoin a heaven and earth in one argument, and, with less than a sorites,[1] resolve all things to God. For though we christen effects by their most sensible and nearest causes, yet is God the true and infallible cause of all; whose concourse, though it be general, yet doth it subdivide itself into the particular actions of every thing, and is that spirit, by which each singular essence not only subsists, but performs its operation.

Sect. xix.—The bad construction and perverse comment on these pair of second causes, or visible hands of God, have perverted the devotion of many unto atheism; who, forgetting

9 . . . . *Homer's chain*;] See *Homer's Iliad.* viii, 18.—*Platon. Theat.* vol. ii, p. 71. *Ed. Bipont. Luciani Jup. Trag.* 45.—*Ed.*

1 . . . . *a sorites*,] Thus in *Ed.* 1642, *C.* and in the authorized editions:—*Ed.* 1642, *W.* has it, *Asorites.* *A sorites* is an argument where one proposition is accumulated on another.—*Ed.*

the honest advisoes of faith, have listened unto the conspiracy of passion and reason. I have therefore always endeavoured to compose those feuds and angry dissentions between affection, faith, and reason: for there is in our soul a kind of triumvirate, or triple government of three competitors, which distracts the peace of this our commonwealth not less than did that other[2] the state of Rome.

As reason is a rebel unto faith, so passion unto reason. As the propositions of faith seem absurd unto reason, so the theorems of reason unto passion, and both unto reason; yea, a moderate and peaceable discretion may so state and order the matter, that they may be all kings, and yet make but one monarchy: every one exercising his sovereignty and prerogative in a due time and place, according to the restraint and limit of circumstance. There are, as in philosophy, so in divinity, sturdy doubts, and boisterous objections, wherewith the unhappiness of our knowledge too nearly acquainteth us. More of these no man hath known than myself; which I confess I conquered, not in a martial posture, but on my knees.[3] For our endeavours are not only to combat with doubts, but always to dispute with the devil. The villany of that spirit takes a hint of infidelity from our studies; and, by demonstrating a neutrality in one way, makes us mistrust a miracle in another. Thus, having perused the Archidoxes, and read the secret sympathies[4] of things, he would dissuade my belief from the miracle of the brazen serpent;[5] make me conceit that image worked by sympathy, and was but an Egyptian trick, to cure their diseases without a miracle. Again, having seen some experiments of bitumen,[6] and having read far more of

2 . . . . *not less than did that other*] Vide *Flor.* lib. iv, cap. 6.—*Ed.*

3 . . . . *knees.*] The remainder of the section is wanting in *Edts.* 1642, and in *MSS. W. & R.*—*Ed.*

4 *Thus, having perused &c.*] Paracelsus, and many others, have writ upon this subject, and pretended to cure wounds by anointing the instrument that made them with a certain ointment. Our countryman, Sir Kenelm Digby, likewise wrote a treatise upon this subject, entitled, *A Discourse upon the Sympathetic Powder*, wherein he relates very many strange stories of its wonderful effects.—*Edit.* 1736.

5 . . . . *he would dissuade my belief &c.*] See *Coquæum, in Aug. De Civitate Dei*, lib. x, cap. 8.—*K.*

6 . . . . *bitumen,*] The common asphaltum, or Jew's pitch, is proper bitumen. It is commonly used for paying the seams of vessels on the Dead Sea, and in the Levant; and forms the principal ingredient in embalming mummies, as we shall take another occasion to observe.—*Ed.*

naphtha,[7] he whispered to my curiosity the fire of the altar might be natural, and bade me mistrust a miracle in Elias, when he intrenched the altar round with water: for that inflammable substance yields not easily unto water, but flames in the arms of its antagonist.[8] And thus would he inveigle my belief to think the combustion of Sodom might be natural,[9] and that there was an asphaltick and bituminous nature in that lake before the fire of Gomorrah.[1] I know that manna is now plentifully gathered in Calabria; and Josephus tells me, in his days it was as plentiful in Arabia. The devil therefore made the query, "where was then the miracle in the days of Moses?" The Israelites saw but that, in his time, which the natives of those countries behold in ours. Thus the devil played at chess with me, and, yielding a pawn, thought to gain a queen of me; taking advantage of my honest endeavours; and, whilst I laboured to raise the structure of my reason, he strove to undermine the edifice of my faith.

Sect. xx.—Neither had these or any other ever such advantage of me, as to incline me to any point of infidelity or desperate positions of atheism; for I have been these many years of opinion there was never any. Those that held religion was the difference of man from beasts, have spoken probably, and proceed upon a principle as inductive as the other. That doctrine of Epicurus, that denied the providence of God, was no atheism, but a magnificent and high-strained conceit of his majesty, which he deemed too sublime to mind the trivial

7 .... *naphtha,*] Naphtha is a bituminous oil, of a pale yellowish colour, thin, fluid, light, transparent, odoriferous, unctious to the touch, and very inflammable. By long exposure to air, and other circumstances, it passes into a second variety, called petrolium.—*Ed.*

"Elle peut de loin attirer le feu à soi, enflammant tout ensemble l'air, qui est là aux environs; et même elle peut brûler au milieu de l'eau. C'étoit la coûtume de s'en servir en Sicile dans les lanternes, au lieu d'huile. Plutarque raconte, dans la Vie d'Alexandre le Grand, que les Babyloniens lui y voulant faire voir la force de ce naphtha, en avoient semé ou jeté quelques gouttes dans quelques rues de la ville, et principalement aux environs de son palais, et que venant là auprès avec un flambeau, il commença à brûler et à s'enflammer tellement, que toutes les rues qui en étoient parsemées toutes paroissoient en feu et en flammes." *Fr. Tr.*

8 .... *and bade me mistrust a miracle in Elias, &c.*] The history is I. *Kings* xviii. It should be Elijah. The author, in *Pseudodox.* lib. vii, cap. 15, sheweth it was not performed naturally; it was (as he saith) a perfect miracle.—*K.*

9 .... *the combustion of Sodom might be natural,*] *Gen.* xix, 24.—Vide et *Strabonem,* l. xvi. *Tac. Hist.* lib. v, ch. 7. *Solinum, Ed. Salmas.* c. 36. *L'Itinerario di Ludov. di Barthema,* lib. i, cap. 6.—*Ed.*

1 .... *bituminous nature in that lake before the fire &c.*] Strabo, in his 16th chapter, says, "It was reported that this lake was not before the destruction of the city, which was followed by an earthquake."—*Ed.*

actions of those inferiour creatures. That fatal necessity of the stoicks is nothing but the immutable law of his will. Those that heretofore denied the divinity of the Holy Ghost have been condemned but as hereticks; and those that now deny our Saviour, though more than hereticks, are not so much as atheists: for, though they deny two persons in the trinity, they hold, as we do, there is but one God.

That villain and secretary of hell, that composed that miscreant piece of the three impostors, though divided from all religions, and neither Jew, Turk, nor Christian, was not a positive atheist. I confess every country hath its Machiavel, every age its Lucian, whereof common heads must not hear, nor more advanced judgments too rashly venture on. It is the rhetorick of Satan; and may pervert a loose or prejudicate belief.

SECT. XXI.—I confess I have perused them all, and can discover nothing that may startle a discreet belief; yet are their heads carried off with the wind and breath of such motives. I remember a doctor in physick, of Italy, who could not perfectly believe the immortality of the soul, because Galen seemed to make a doubt thereof. With another I was familiarly acquainted, in France, a divine, and a man of singular parts, that on the same point was so plunged and gravelled with three lines of Seneca,[2] that all our antidotes, drawn from both Scripture and philosophy, could not expel the poison of his errour. There are a set of heads that can credit the relations of mariners, yet question the testimonies of Saint Paul: and peremptorily maintain the traditions of Ælian or Pliny; yet, in histories of Scripture, raise queries and objections: believing no more than they can parallel in humane authors. I confess there are, in Scripture, stories that do exceed the fables of poets,[3] and, to a captious reader, sound like Garagantua or Bevis.[4] Search all the legends of times past, and the

[2] . . . . *three lines of Seneca,*] viz:—

An toti morimur! nullaque pars manet
Nostri, ...
Post mortem nihil est, ipsaque mors nihil.
Mors individua est noxia corpori,
Nec parcens animæ.

[3] . . . . *there are, in Scripture, stories that do exceed the fables of poets,*] So the author of *Relig. Laici.* "Certe mira admodum in S. S. plusquam in reliquis omnibus historiis traduntur;" (and then he concludes himself with the author) "Sed quæ non retundunt intellectum, sed exercent."—*K.*

[4] . . . . *Garagantua or Bevis.*] For the former see *Rabelais*:—for the latter, *Syr Bevis of Southampton.—Ed.*

fabulous conceits of these present, and 't will be hard to find one that deserves to carry the buckler unto Sampson; yet is all this of an easy possibility, if we conceive a divine concourse, or an influence but from the little finger of the Almighty. It is impossible that, either in the discourse of man or in the infallible voice of God, to the weakness of our apprehensions there should not appear irregularities, contradictions, and antinomies: myself could show a catalogue of doubts, never yet imagined nor questioned, as I know, which are not resolved at the first hearing; not fantastick queries or objections of air; for I cannot hear of atoms in divinity. I can read the history of the pigeon that was sent out of the ark, and returned no more, yet not question how she found out her mate that was left behind: that Lazarus was raised from the dead, yet not demand where, in the interim, his soul awaited; or raise a law-case, whether his heir might lawfully detain his inheritance bequeathed unto him by his death, and he, though restored to life, have no plea or title unto his former possessions. Whether Eve was framed out of the left side of Adam, I dispute not; because I stand not yet assured which is the right side of a man; or whether there be any such distinction in nature. That she was edified out of the rib of Adam, I believe; yet raise no question who shall arise with that rib at the resurrection.[5] Whether Adam was an hermaphrodite, as the rabbins contend upon the letter of the text; because it is contrary to reason, there should be an hermaphrodite before there was a woman, or a composition of two natures, before there was a second composed.[6] Likewise, whether the world was created in autumn, summer, or the spring;[7] because it was created in them all: for, whatsoever sign the sun possesseth, those four seasons are actually existent.

5 *That she was edified &c.*] This clause is wanting in *Edts.* 1642, and in *MSS. W. & R.*

On the subject, see *Pseudodoxia Epidemica*, lib. vii, cap. 2.—*Ed.*

6 . . . . *as the rabbins &c.*] Wanting in *MS. R.*—*Ed.*

7 . . . . *whether the world were created in autumn, summer, or the spring;*] Two learned poets of antiquity are of opinion that it begins in spring;—*Lucretius*, lib. v, 800, 816;—*Virgil. Georg.* lib. ii, 335. But there is a difference respecting it among church doctors; some agreeing with these poets, and some affirming the time to be Autumn. Strictly speaking, it was not created in any one, but in all, of the seasons, as the author saith here, and hath shewn at large, *Pseudodox. Epid.* lib. vi, cap. 2.—*K.*

It is the nature of this luminary to distinguish the several seasons of the year; all which it makes at one time in the whole earth, and successive in any part thereof. There are a bundle of curiosities, not only in philosophy, but in divinity, proposed and discussed by men of most supposed abilities, which indeed are not worthy our vacant hours, much less our serious studies. Pieces only fit to be placed in Pantagruel's library,[8] or bound up with Tartaretus, *De Modo Cacandi*.[9]

SECT. XXII.—These are niceties that become not those that peruse so serious a mystery. There are others more generally questioned, and called to the bar, yet, methinks, of an easy and possible truth.

'T is ridiculous to put off or drown the general flood of Noah, in that particular inundation of Deucalion.[1] That there was a deluge once, seems not to me so great a miracle as that there is not one always.[2] How all the kinds of creatures, not only in their own bulks, but with a competency of food and sustenance, might be preserved in one ark, and

8 . . . . *in Pantagruel's library,*] That of St. Victor, described by Pantagruel, *Rabel.* tom. ii, cap. 7.—*Ed.*

9 . . . . *or bound up with Tartaretus,* De Modo Cacandi.] The work here alluded to, or more properly speaking, the *imaginary* work here alluded to, is thus spoken of by a French Commentator on the works of Rabelais. "(Pierre Tartaret). Il faudroit recourir aux registres de la Sorbonne pour pouvoir dire au juste en quel tems vivoit ce docteur, dont tout le mérite consista autrefois à raffiner encore et à enchérir sur les ridicules subtilitéz de Jean Scot, dans une infinité de questions *quodlibétaires* et autres matières, où Tartaret s'exerça avec tant de témérité, souvent même avec tant d'impiété, que H. Etienne met le Sorboniste Tartaret au nombre de ces malheureux qui avec le tems avoient fait revivre par leurs écrits le detestable *évangile éternel* qu'anciennement les moines mendians opposèrent aux Vaudois et à leur doctrine. Les Contes d'Eutrapel, chap. 26, parlent d'une dispute de ce Tartaret avec Mandeston, autre *quodlibétaire* de cette maison, sur la prononciation du mot *mihi*, laquelle dispute fut assoupie par le grammairien Caillard. Seroit-ce par rapport aux ordures et aux blasphèmes qui étoient sortis en si grand nombre de la plume et de la bouche de Tartaret, ou à propos de la vicieuse coûtume qu'avoit peut-être ce docteur, de dire et d'écrire *chi* pour *hi* dans le mot *mihi*, que Rabelais lui attribue un livre d'un sujet si vilain? L'un et l'autre est possible; mais selon moi l'auteur l'y considère principalement comme disciple de ce même Jean Scot qu'eû égard aux scandaleuses matières par lui remuées, le peintre Holbein avoit déjà plaisamment representé, comme rendant l'ame par la bouche, sous la figure d'un enfant *stulta cacantis logicalia.*". Les œuvres de Pierre Tartaret furent réimprimés in 8vo. à Lyon, l'an 1621.—*Rabelais,* tom. ii, cap. 7. *Amst.* 1711.—*Ed.*

1 *'T is ridiculous &c.*] Lucian's description of the flood of Deucalion so strikingly accords, in its particulars, with the Mosaick account of the deluge, that it is difficult not to refer the two narrations to the same event.—*Ed.*

2 . . . . *seems not to me &c.*] Il n'est pas besoin de douter, qu'en plusieurs places du monde la mer est plus haute que la terre-ferme; de façon que c'est une merveille, qu'on n'entende pas parler davantage de déluges: notre Hollande est si basse, qu'elle pourroit être entièrement engloutie en peu de temps de la mer, si elle n'en étoit empêchée par les dunes de sable, les digues, les moulins, et les écluses.—*Fr. Tr.*

within the extent of three hundred cubits, to a reason that rightly examines it, will appear very feasible.[3] There is another secret, not contained in the Scripture, which is more hard to comprehend, and put the honest Father to the refuge of a miracle;[4] and that is, not only how the distinct pieces of the world, and divided islands, should be first planted by men, but inhabited by tigers, panthers, and bears. How America abounded with beasts of prey, and noxious animals, yet contained not in it that necessary creature, a horse, is very strange.[5] By what passage those, not only birds, but dangerous and unwelcome beasts, came over. How there be creatures there,[6] which are not found in this triple continent. All which must needs be strange unto us, that hold but one ark; and that the creatures began their progress from the mountains of Ararat.[7] They who, to salve this, would make the deluge particular, proceed upon a principle that I can no way grant; not only upon the negative of Holy Scriptures, but of mine own reason, whereby I

[3] . . . . *feasible.*] On the contrary, *Edts.* 1642 read, *difficult;* and *MSS. W. & R.* read, *difficile.—Ed.*

[4] . . . . *and put the honest Father to the refuge of a miracle;*] This honest father was St. Augustine, who delivers his opinion, that it might be miraculously done, *De Civ. Dei*, lib. xvi, cap. 7; but saith not that it could not be done without a miracle.—*K.*

[5] . . . . *is very strange.*] These words are omitted in *Edts.* 1642 & *MS. W.—Ed.*

[6] *How there be creatures there,*] In *Edts.* 1642 and *MS. W.* the passage is thus: "How thereby creatures are there."—*Ed.*

[7] *There is another secret, &c.*] The diffusion of the animal creation over the face of the earth does indeed involve a most interesting and difficult inquiry. Whence came the innumerable tribes of human beings, diversified in form, complexion, and character, which inhabit every continent and island of our globe? Whence the myriads of animals, and birds, and lesser creatures, which every where teem in the most astonishing profusion and variety; peopling its mountains, and plains, and forests, and glittering on its surface? Who can solve the problem? Who will undertake to make out successive returns of this mighty population, to mark out the progress of its migrations, and trace back its genealogies through a succession of 4000 years, up to its cradle, the ark, reposing on the summit of Ararat, amidst the silence of universal desolation? It is a question about which so little is known, and so much must depend on conjecture, that it seems rather calculated for the exercise of ingenuity, or even the indulgence of scepticism, than likely to lead to the development of truth. We may observe, however, that to us the difficulty seems the same, whether the deluge existed or not; whether we suppose the migration to have proceeded from the mountain of Ararat or the garden of Eden.

The French translator quaintly remarks; "il y a eu beaucoup de personnes qui ont brouillé beaucoup de papier, pour trouver la verité de cette affaire; mais il n'y a personne qui en ait pu jamais trouver une parfaite assurance, ou certitude."

Moltkenius quotes *Tostatus, in Gen.* chap. 8.

Among the principal writers of our own country on the deluge, and questions connected with it, we may enumerate Delany, A. Fuller, Cockburn, Burnet, Whiston, Bryant, Catcott, Cumberland, Hurdis, Hutchinson, Ray, Shuckford, &c.—*Ed.*

can make it probable that the world was as well peopled in the time of Noah as in ours; and fifteen hundred years, to people the world, as full a time for them as four thousand years since have been to us.[8] There are other assertions and common tenets drawn from Scripture, and generally believed as Scripture,[9] whereunto, notwithstanding, I would never betray the liberty of my reason. 'T is a postulate to me, that Methusalem was the longest lived of all the children of Adam; and no man will be able to prove it; when, from the process of the text, I can manifest it may be otherwise.[1] That Judas perished by hanging himself, there is no certainty in Scripture: though, in one place, it seems to affirm it, and, by a doubtful word, hath given occasion to translate it; yet, in another place, in a more punctual description, it makes it improbable, and seems to overthrow it.[2] That our fathers, after the flood, erected the tower of Babel,[3] to preserve themselves against a second deluge, is generally opinioned and believed; yet is there another intention of theirs expressed in Scripture. Besides, it is improbable, from the circumstance of the place; that is, a plain in the land of Shinar. These are no points of faith; and therefore may admit a free dispute. There are yet others, and those familiarly concluded from the text, wherein (under favour) I see no conse-

8 . . . . *and fifteen hundred years, &c.*] See *Pseudod. Epid.* lib. vi, cap. 6.—*K.*

9 . . . . *generally believed as Scripture,*] Not in *MS. R.*—*Ed.*

1 *'T is a postulate to me, that Methusalem &c.*] See *Pseudod. Epid.* lib. vii, cap. 3.—*K.*

2 *That Judas perished by hanging himself, there is no certainty in Scripture: &c.*] The doubt arises from the word απηγξατο, in Matthew xvii, 5, which signifieth suffocation as well as hanging; but Erasmus translates it "abiens laqueo se suspendit." The words in the Acts are, "When he had thrown down himself headlong, he burst in the midst, and all his bowels gushed out;" which seems to differ much from the expression of Matthew, yet the ancient writers and fathers of the church do unanimously agree that he was hanged. Some are so particular, that they even mention that it was with a cord, on a fig-tree, the day after the kiss, &c.; but there are two, that is, Euthymius and Œcumenius, who assert that hanging did not kill him; but that either the rope broke, or that he was cut down, and afterwards cast himself down headlong, as it is related in the beforementioned place of the Acts. And this may serve to reconcile these two seemingly disagreeing Scriptures.—*K.*

Keck, in quoting from the Acts, c. i, v. 18, evidently used the Geneva translation, which differs very materially from the commonly used version. See *Rosenmüller, Schol.* in loc., and *Pseud. Epid.* lib. vii, cap. 11.—*Ed.*

3 *That our fathers, after the flood, erected the tower of Babel,*] For this see what the author saith in his *Pseudodox. Epidemic.* lib. vii, cap. 6.—*K.*

Josephus témoigne, *Antiquitatum Judaicarum*, lib. i, qu'ils commencèrent cet ouvrage afin qu'un nouveau déluge ne vint pas à les endommager.—*Fr. Tr.*

quence.[4] The church of Rome confidently proves the opinion of tutelary angels, from that answer, when Peter knocked at the door, 'T is not he, but his angel; that is, might some say, his messenger, or somebody from him; for so the original signifies; and is as likely to be the doubtful family's meaning. This exposition I once suggested to a young divine, that answered upon this point; to which I remember the Franciscan opponent replied no more, but, that it was a new, and no authentick, interpretation.

Sect. xxiii.—These are but the conclusions and fallible discourses of man upon the word of God; for such I do believe the Holy Scriptures; yet, were it of man, I could not choose but say, it was the most singular and superlative piece that hath been extant since the creation. Were I a pagan, I should not refrain the lecture of it; and cannot but commend the judgement of Ptolemy, that thought not his library complete without it. The Alcoran[5] of the Turks (I speak without prejudice) is an ill-composed piece, containing in it vain and ridiculous errours in philosophy, impossibilities, fictions, and vanities beyond laughter, maintained by evident and open sophisms, the policy of ignorance, deposition of universities, and banishment of learning. This, hath gotten foot by arms and violence: that, without a blow, hath disseminated itself[6] through the whole earth. It is not unremarkable, what Philo first observed, that the law of Moses continued two thousand years without the least alteration; whereas, we see, the laws of other commonwealths do alter with occasions: and even those, that pretended their original from some divinity, to

4 .... *consequence.*] Add, from the *Edts.* 1642, and *MSS. W. & R.*, the following clause: "as, to prove the Trinity from the speech of God, in the plural number,—*faciamus hominem*, " let us make man," which is but the common style of princes and men of eminency,—he that shall read one of His Majesty's proclamations, may with the same logick conclude, there be two kings in England."—*Ed.*

5 .... *and cannot but commend &c.*] In *MS. R.* a blank occurs in the middle of this passage, thus: " And cannot but commend the judgement of Ptolemy, that thought the Alcoran &c " In *MS. W.* it stands thus, " And cannot but commend the judgement of Ptolemy, that thought the Alcoran &c."—*Ed.*

6 .... *banishment of learning.* This *hath gotten foot by arms and violence: that, without a blow,* hath disseminated *itself*] We follow *MS. W.* in placing a period after " learning"—; but have ventured to differ from all the editions and *MSS.* by transposing *this* and *that*, because the sense evidently required it. The reading of *Edts.* 1642, *doth disseminate*, might perhaps be preferred to that of the other editions, *hath disseminated*, though we have not adopted it.—*Ed.*

have vanished without trace or memory. I believe, besides Zoroaster, there were divers others that writ before Moses;[7] who, notwithstanding, have suffered the common fate of time. Men's works have an age, like themselves; and though they outlive their authors, yet have they a stint and period to their duration. This only is a work too hard for the teeth of time, and cannot perish but in the general flames, when all things shall confess their ashes.

SECT. XXIV.—I have heard some with deep sighs lament the lost lines of Cicero; others with as many groans deplore the combustion of the library of Alexandria: for my own part, I think there be too many in the world; and could with patience behold the urn and ashes of the Vatican, could I, with a few others, recover the perished leaves of Solomon.[8] I would not omit a copy of Enoch's pillars,[9] had they many nearer authors than Josephus, or did not relish somewhat of the fable.[1] Some men have written more than others have spoken. Pineda quotes more authors, in one work,* than are

* Pineda, in his *Monarchia Ecclesiastica*, quotes one thousand and forty authors.[a]

7 *I believe, besides Zoroaster, &c.*] Zoroaster was long before Moses, and of great name: he was the father of Ninus. See *Justin*, lib. ii. "Si quamlibet modicum emolumentum probaveritis, ego ille sim Carinondas vel Damigeron, vel is Moses, vel Joannes, vel Apollonius, vel ipse Dardanus, vel quicunque alius *post* Zoroastrem et Hostanem inter magos celebratus est." *Apuleius in Apoll.*—*K.*

Il n'est pas besoin de douter qu'il n'y ait eu plusieurs autres anciens écrivains, que Moyse; car d'où auroit-il été querir lui-même la sagesse d'Egypte? —*Fr. Tr.*

See *Hobbes, Works*, p. 266.—*Ed.*

8 . . . . *recover the perished leaves of Solomon.*] It is very certain that we have not many things mentioned in I *Kings* iv, 32, 33. Josephus tells us, besides, that Solomon wrote upon witchcraft and the manner of casting out devils. *Antiquities*, lib. viii, cap. 2.—*Edt.* 1736.

"Solomonem De Incantamentis et Formulis Dæmones Ejiciendi libros scripsisse: cui tamen parum tribuendum puto."—*M.*

9 *I would not omit a copy of Enoch's pillars, &c.*] For this, the story is, that Enoch, or his father Seth, having been informed by Adam, that the world was to perish once by water, and a second time by fire, did cause two pillars to be erected; the one of stone against the water, and another of brick against the fire; and that upon those pillars was engraven all such learning as had been delivered to, or invented by, mankind; and from thence it came that all knowledge and learning was not lost by means of the flood, by reason that one of the pillars (though the other perished) did remain after the flood; and Josephus witnesseth, till his time, *Antiq. Judaic.* lib. i, cap. 3.—*K.*

Vide *De Enochi Libris Epist. Judæ*, et *August. De Civit. Dei*, lib. xviii, c. 38, et lib. xv, cap. 22. "Quod illa tamen merito suspecta habeantur, quæ sub tantæ antiquitatis nomine proferentur, fatetur Augustinus;" *ibid.*—*M.*

1 . . . *had they many nearer authors than Josephus, or did not relish somewhat of the fable.*] In *MSS. W. & R.*, and *Edts.* 1642, thus: ". . . . had they any better author than Josephus, or did not relish too much of the fable."—*Ed.*

[a] He that would give himself the trouble to reckon the number of authors quoted by Voetius, in his *Theological Dis-*

necessary in a whole world. Of those three great inventions* in Germany, there are two which are not without their incommodities.[2] 'T is not a melancholy *utinam* of my own, but the desires of better heads, that there were a general synod—not to unite the incompatible difference of religion, but—for the benefit of learning, to reduce it, as it lay at first, in a few and solid authors; and to condemn to the fire those swarms and millions of rhapsodies, begotten only to distract and abuse the weaker judgements of scholars, and to maintain the trade and mystery of typographers.

SECT. XXV.—I cannot but wonder with what exception the Samaritans could confine their belief to the Pentateuch, or five books of Moses.[3] I am ashamed at the rabbinical interpretation of the Jews, upon the Old Testament,[4] as much as their defection from the New: and truly it is beyond wonder, how that contemptible and degenerate issue of Jacob, once so devoted to ethnick superstition, and so easily seduced to the idolatry of their neighbours, should now, in such an obstinate and peremptory belief, adhere unto their own doctrine, expect impossibilities, and, in the face and eye of the church,

* Guns; printing; the mariner's compass. *MS. W.*

putes, will find they far surpass the number of Pineda.—*Edit.* 1736.

[2] *Of those three great inventions in Germany, there are two which are not without their* incommodities.] Those two, he means, are printing and gunpowder, which are commonly taken to be German inventions; but artillery was in China above 1500 years since, and printing long before it was in Germany, if we may believe Juan Gonzales Mendoza, in his *History of China*, lib. iii, cap. 15, 16. The incommodities of these two inventions are well described by Samuel Daniel, lib. vi, of the *Civil Wars*. For the other invention, the Latin annotator doubts whether the author means church-organs or clocks? I suppose he means clocks; because I find that invention reckoned by a German, with the other two, as a remarkable one. It is by Busbequius, speaking of the Turks, who hath these words: "Testes majores minoresque bombardæ, multaque alia quæ ex nostris excogitata ipsi ad se avertunt; ut libros tamen typis excuderent, horologia in publico haberent, nondum adduci potuerunt." *Epist. Legat. Turcic.* I suppose, if he had known any invention which, next to the other two, had been greater than this, he would not have named this; and this being the next considerable, we have no cause to doubt but the author meant it.—*K.*

There seems reason to doubt whether the invention of either clocks or the compass is of German origin. The former has been attributed to the Saracens —the latter to the Chinese.

After *incommodities*, add from the *Edts.* 1642, and from *MSS. W. & R.*, this clause: "and 't is disputable whether they exceed not their use and commodities."—*Ed.*

[3] *I cannot but wonder &c.*] Vide *Cunæum De Rep. Hebr.* lib. ii, cap. 16.—*M.*

[4] *I am ashamed at the rabbinical interpretation of the Jews upon the Old Testament,*] De Talmudicis et Scripturariis, vide *Seldenium De Anno Civil. Veter. Judæor.* cap. 2.—*Scaliger De Emend. Temp.* lib. ii.—*M.*

persist without the least hope of conversion. This is a vice in them, that were a virtue in us: for obstinacy in a bad cause is but constancy in a good: and herein I must accuse those of my own religion; for there is not any of such a fugitive faith, such an unstable belief, as a Christian; none that do so often transform themselves, not unto several shapes of Christianity, and of the same species, but unto more unnatural and contrary forms of Jew and Mahometan; that, from the name of Saviour, can descend to the bare term of prophet: and, from an old belief that he is come, fall to a new expectation of his coming. It is the promise of Christ, to make us all one flock: but how and when this union shall be, is as obscure to me as the last day. Of those four members of religion we hold a slender proportion.[5] There are, I confess, some new additions; yet small to those which accrue to our adversaries; and those only drawn from the revolt of pagans; men but of negative impieties; and such as deny Christ, but because they never heard of him. But the religion of the Jew is expressly against the Christian, and the Mahometan against both; for the Turk, in the bulk he now stands, is beyond all hope of conversion: if he fall asunder, there may be conceived hopes; but not without strong improbabilities. The Jew is obstinate in all fortunes; the persecution of fifteen hundred years hath but confirmed them in their errour. They have already endured whatsoever may be inflicted; and have suffered, in a bad cause, even to the condemnation of their enemies. Persecution is a bad and indirect way to plant religion. It hath been the unhappy method of angry devotions, not only to confirm honest religion, but wicked heresies, and extravagant opinions. It was[6] the first stone and basis of our faith. None can more justly boast of persecutions, and glory in the number and valour of[7] martyrs. For, to speak properly, those are true and almost only examples of fortitude. Those

5 *Of those four members of religion &c.*] That is, Pagans, Mahometans, Jews, and Christians: yet, even when Sir Thomas wrote, Christians (including the Greek, Papal, and Protestant communions,) were more numerous than Jews; now, the proportion is still larger. The population of our globe has been estimated at *one thousand millions:* viz. of Pagans, 630—of Mahometans, 188—of Jews, 12—of Christians, 170.—*Ed.*

6 *It was*] He means "The suffering of it was."—*Ed.*

7 . . . . *of*] *MS. R.* reads, *than.*—*Ed.*

that are fetched from the field, or drawn from the actions of the camp, are not ofttimes so truly precedents of valour as[8] audacity, and, at the best, attain but to some bastard piece of fortitude. If we shall strictly examine the circumstances and requisites which Aristotle requires[9] to true and perfect valour, we shall find the name only in his master, Alexander, and as little in that Roman worthy, Julius Cæsar; and if any, in that easy and active way, have done so nobly as to deserve that name, yet, in the passive and more terrible piece, these have surpassed, and in a more heroical way may claim, the honour of that title. 'T is not in the power of every honest faith to proceed thus far, or pass to heaven through the flames. Every one hath it not in the full measure, nor in so audacious and resolute a temper, as to endure those terrible tests and trials; who, notwithstanding, in a peaceable way, do truly adore their Saviour, and have, no doubt, a faith acceptable in the eyes of God.

Sect. xxvi.—Now, as all that die in the war are not termed soldiers, so neither can I properly term all those that suffer in matters of religion, martyrs. The council of Constance condemns John Huss for a heretick: the stories of his own party style him a martyr. He must needs offend the divinity of both, that says he was neither the one nor the other.[1] There are many (questionless) canonized on earth, that shall never be saints in heaven; and have their names in histories and martyrologies, who, in the eyes of God, are not so perfect martyrs as was that wise heathen Socrates, that suffered on a fundamental point of religion,—the unity of God. I have often pitied the miserable bishop* that suffered in the cause

* Virgilius. *MS. W.*

8 . . . . *as*] So the authorized *Edts.*, and *MS. W.; Edts.* 1642 read, *and.–Ed.*

9 . . . . *which Aristotle requires &c.*] Voyez *Aristotel. Ethic. ad Nicomach.* lib. iii, cap. 6.—*Fr. Tr.*

1 *He must needs offend the divinity &c.*] The *Edts.* 1642 and *MS. W.* read, "It is false divinity, if I say he was neither the one nor the other." *MS. R.* reads, "Is it false divinity, if I say he was neither the one nor the other?"

In this passage, (as in some others,) the author seems to have modified his opinions in preparing them to meet the public eye. The reading of *MS. R.* appears to us to be the true one, and to convey what the author really intended to express; viz. a doubt of the claim which the great Bohemian teacher possessed to be enrolled in "the noble army of martyrs." Feeling, however, some reluctance to avow this doubt,—or, let us

of antipodes;[2] yet cannot choose but accuse him of as much madness, for exposing his living on such a trifle, as those of ignorance and folly, that condemned him. I think my conscience will not give me the lie, if I say there are not many extant, that, in a noble way, fear the face of death less than myself; yet, from the moral duty I owe to the commandment of God, and the natural respect that I tender unto the conservation of my essence and being, I would not perish upon a ceremony, politick points, or indifferency: nor is my belief of that untractable temper as, not to bow at their obstacles, or connive at matters wherein there are not manifest impieties. The leaven, therefore, and ferment of all, not only civil, but religious, actions, is wisdom; without which, to commit ourselves to the flames is homicide, and (I fear) but to pass through one fire into another.

SECT. XXVII.—That miracles are ceased, I can neither prove nor absolutely deny, much less define the time and period of their cessation. That they survived Christ is manifest upon record of Scripture: that they outlived the apostles also, and were revived at the conversion of nations, many

rather hope, perceiving at length its injustice, our author has changed the sentence, and presented us with this *truism:* "He must needs offend the divinity of both, that says he was neither the one nor the other." Doubtless; he who differs in opinion from *both* parties, agrees with *neither:* but it would require far more argument to prove that John Huss, though "he does not seem to have held any one doctrine which at that day was called heretical," did not lay down his life for the faith of Christ: "he may," indeed, to use again the words of Milner, "justly be said to have been a martyr for holy practice itself." Our author seems, for want perhaps of an accurate acquaintance with the character and history of John Huss, to have selected him for the illustration of a maxim he was endeavouring (somewhat on his own behalf) to establish: "that a Christian is not required to sacrifice his life upon points of ceremony."

The writings of Sir Thomas Browne, (corroborated by several curious particulars we shall give in his Life) abundantly prove how powerful were his sympathies towards all those ceremonies and observances which, he says, "*misguided zeal* terms superstition." This peculiarity of character gave free scope for the display of that fervent and admirable charity which he felt towards those who differed from him in religious profession; but, in the present instance, we do not hesitate to say, it has dictated a position which is indeed "false divinity;" and which, had it been adopted by persecuted Christians in every age, would have robbed the church of the very "first stone and basis of her faith," the principle that Christians are bound, even in the SMALLEST points, involving the authority of their Redeemer, to obey him; remembering his injunction,—"Be thou faithful UNTO DEATH." For the martyrdom of John Huss, we refer to *Milner's Hist. of the Church of Christ*, vol. iv, ch. 2.—*Ed.*

[2] . . . . *that suffered &c.*] The suffering was, that he *lost* his bishoprick for *denying* the antipodes. Vid. *Aventin. in Hist. Boic.*—*K.*

"Virgilius, bishop of Saltzburg, having asserted that there existed antipodes, the archbishop of Mentz declared him a heretick, and consigned him to the flames." *D' Israeli's Cur. of Lit.* vol. i, p. 49.

years after, we cannot deny, if we shall not question those writers whose testimonies we do not controvert in points that make for our own opinions: therefore, that may have some truth in it, that is reported by the Jesuits of their miracles in the Indies.[3] I could wish it were true, or had any other testimony than their own pens. They may easily believe those miracles abroad, who daily conceive a greater at home—the transmutation of those visible elements into the body[4] and blood of our Saviour;—for the conversion of water into wine, which he wrought in Cana, or, what the devil would have had him do in the wilderness, of stones into bread, compared to this, will scarce deserve the name of a miracle: though, indeed, to speak properly, there is not one miracle greater than another; they being the extraordinary effects of the hand of God, to which all things are of an equal facility; and to create the world as easy[5] as one single creature. For this is also a miracle; not only to produce effects against or above nature, but before nature; and to create nature, as great a miracle as to contradict or transcend her. We do too nar-

"Il fut fait évêque, malgré lui, vers l'an 764. Le pape Zacharie le censura publiquement pour avoir avancé qu'il y avoit des Antipodes, et déclara même cette opinion hérétique. Virgile mourut le 27 Novembre, 780. Le pape Grégoire IX le mit au rang des saints; ce qui est une raison de douter qu'il eut été repris comme hérétique au sujet des Antipodes." *Moréri, Gr. Dict.* vol. 10.

"Virgilius had asserted, that the figure of the earth was globular; that it was inhabited all round; and that the parts of it diametrically opposite to each other had, in like manner, their inhabitants diametrically opposite to each other. This Boniface could not comprehend; and therefore wrote to the pope, charging Virgilius, as if he had actually taught a plurality of worlds. This Zachary looked upon as a dangerous heresy, and therefore wrote to Virgilius, summoning him to clear himself, at the tribunal of the apostolic see, from the heresy with which he was charged. Thus much we learn from Zachary's answer to the letter of Boniface. But what was the issue of that affair, we are no where told. However, as Virgilius continued to preach, and indeed with great success, the Gospel in Bavaria and Carinthia, and was, *some years after, preferred to the see of Saltzburg*, nay, and is now honoured by the church of Rome as a saint, it is not at all to be doubted but that he cleared himself from all suspicion of heresy, to the full satisfaction of the pope, and the great mortification and confusion of his ignorant rival and accuser." *Bower's History of the Popes*, vol. iii, p. 339.

Which of these conflicting statements are we to believe?—*Ed.*

3 . . . . *that is reported by the Jesuits of their miracles &c.*] Moltkenius refers to Joseph Acosta, and Bartholomæus de las Casas. For more recent information, see *Charlevoix, Hist. Gen. du Paraguay*; 3 vols. 4to. 1756.—*The same, translated into English*, 1769.—*Azara's Travels in South America; from* 1781 *to* 1801, 4 vls. 8vo. 1809,—and especially *Southey's Hist. of Brazil*, 3 vols. 4to. 1810–19.—*Ed.*

4 . . . *the body*] So *MS. R.; Edits.* 1642 and *MS. W.* read, "the visible body."—*Ed.*

5 . . . . *and to create the world as easy*] So also the *MSS.; Edts.* 1642 read, *easily.—Ed.*

rowly define[6] the power of God, restraining it to our capacities. I hold that God can do all things:[7] how he should work contradictions, I do not understand, yet dare not, therefore, deny.[8] I cannot see why the angel of God should question Esdras to recall the time past, if it were beyond his own power; or that God should pose mortality in that which he was not able to perform himself. I will not say God cannot, but he will not, perform many things, which we plainly affirm he cannot. This, I am sure, is the mannerliest proposition; wherein, notwithstanding, I hold no paradox: for, strictly, his power is the same with his will; and they both, with all the rest, do make but one God.

Sect. xxviii.[9]—Therefore, that miracles have been, I do believe; that they may yet be wrought by the living, I do not deny: but have no confidence in those which are fathered on the dead. And this hath ever made me suspect the efficacy of relicks, to examine the bones, question the habits and appertenances of saints, and even of Christ himself. I cannot conceive why the cross that Helena found, and whereon Christ himself died, should have power to restore others unto life.[1] I excuse not Constantine from a fall off his horse, or a mischief from his enemies, upon the wearing those nails on his bridle which our Saviour bore upon the cross in his hands.[2] I compute among your *piæ fraudes*, nor many degrees before consecrated swords and roses, that which Baldwin, king of Jerusalem, returned the Genoese for their costs and pains in his wars; to wit, the ashes of John the Baptist. Those that hold, the sanctity of their souls doth leave behind a tincture and sacred faculty on their bodies, speak naturally of miracles, and do not salve the doubt. Now, one reason I tender so little devotion unto relicks is, I think, the slender and doubtful respect I have always held unto antiquities. For that, indeed, which I admire, is far before antiquity; that is, Eter-

6 . . . . *define*] *confine*, in *MS. R.–Ed.*

7 . . . . *can do all things:*] *Edts.* 1642 read, *cannot, &c. MSS. W. & R.* read, ". . . . can do all things but sin."—*Ed.*

8 . . . . *how he should work contradictions, &c.*] Montaigne has a passage very similar to this;–*Essais*, liv. ii, cap. 12.–*K.*

9 *Sect.* xxviii.] This section is not in *Edts.* 1642, nor in *MSS. W. & R.*—*Ed.*

1 *I cannot conceive why &c.*] Vide *Nicephori Historica Ecclesiastica*, lib. viii, cap. 29.—*M.*

2 *I excuse not Constantine &c.*] Hac de re videatur *P. Diac. Hist. Miscell.*–*K.*

nity; and that is, God himself; who, though he be styled the Ancient of Days, cannot receive the adjunct of antiquity, who was before the world, and shall be after it, yet is not older than it: for, in his years there is no climacter: his duration is eternity; and far more venerable than antiquity.

SECT. XXIX.—But, above all things, I wonder how the curiosity of wiser heads could pass that great and indisputable miracle, the cessation of oracles;[3] and in what swoon their reasons lay, to content themselves, and sit down with such a far-fetched and ridiculous reason as Plutarch allegeth for it.[4] The Jews, that can believe the supernatural solstice of the sun in the days of Joshua, have yet the impudence to deny the eclipse, which every pagan confessed,[5] at his death: but for this, it is evident beyond all contradiction: the devil himself confessed it.* Certainly it is not a warrantable curiosity, to examine the verity of Scripture by the concordance of human

* In his oracle to Augustus.

[3] . . . *I wonder how the curiosity of wiser heads could pass that great and indisputable miracle, the cessation of oracles*;] There are three opinions touching the manner how the predictions of these oracles were performed: some say, by vapour; some, by the intelligences or influences of the heavens; and others say, by the assistance of the devils. Now, the indisputable miracle the author speaks of is, that they ceased upon the coming of Christ; and it is generally so believed: and the oracle of Delphos, delivered to Augustus, mentioned by the author in this section, is brought to prove it; which is this:

Me puer Hebræus divos Deus ipse gubernans
Cedere sede jubet, tristemque redire sub orcum.
Aris ergo dehinc tacitus discedito nostris.

But yet, it is so far from being true, that their cessation was miraculous, that the truth is, there never were any predictions given by those oracles at all.

That their cessation was not upon the coming of Christ, we have luculent testimony out of Tully, in his 2d lib. *De Divinat.*, which he writ many years before Christ was born; who tells us, that they were silent (and, indeed, he never thought they were otherwise,) long before that time, insomuch that they were come into contempt: "cur isto modo jam oracula Delphis non eduntur, non modo nostra ætate; sed jamdiu jam ut nihil possit esse contemptius?" Sir H. Blount, in his *Levantine Voyage*, saith, he saw the Statua of Memnon, so famous of old; he saith it was hollow at top, and that he was told by the Egyptians and Jews there with him, that they had seen some enter there, and come out at the pyramid, two bows-shoot off; then (saith he) I soon believed the oracle, and believe all the rest to have been such; which, indeed, is much easier to imagine, than that it was performed by any of the three ways before mentioned.—*K.*

On the subject of oracles, see our author's Tract; of which we have been so fortunate as to find, in the British Museum, a much more copious *MS.* than that from which Archbishop Tennison printed. See also *Pseud. Epid.* lib. vii, cap. xii.—*Ed.*

[4] . . . . *such a far-fetched &c.*] It was thought that oracles were nourished by exhalations from the earth; and that, when those ceased, the oracles famished and died for want of sustenance. This was Plutarch's reason; but not devised by him; for Cicero scoffs at it: "De vino aut salsamento putes loqui, quæ evanescunt vetustate." *De Divinatione.*—*K.*

[5] . . . . *which every pagan confessed,*] Vid. *Euseb. Chron. ad. An.* xv *Tiberii*; et *Origen adv. Celsum*, lib. ii.—*Tertull. Apol.* cap. 21.—*Augustinus De Civitate, Dei.* lib. 3, cap. 15.—*M.*

history; or seek to confirm the chronicle of Hester or Daniel by the authority of Megasthenes[6] or Herodotus. I confess, I have had an unhappy curiosity this way, till I laughed myself out of it with a piece of Justin, where he delivers that the children of Israel, for being scabbed, were banished out of Egypt.[7] And truly, since I have understood the occurrences of the world, and know in what counterfeiting shapes and deceitful vizards times present represent on the stage things past, I do believe them little more than things to come.[8] Some have been of my own opinion, and endeavoured to write the history of their own lives; wherein Moses hath outgone them all, and left not only the story of his life, but, as some will have it,[9] of his death also.

Sect. xxx.—It is a riddle to me, how this story of oracles hath not worned out of the world that doubtful conceit of spirits and witches; how so many learned heads should so far forget their metaphysicks, and destroy the ladder and scale of creatures, as to question the existence of spirits: for my part, I have ever believed, and do now know, that there are witches.[1] They that doubt of these do not only deny them, but spirits: and are obliquely, and upon consequence, a sort, not of infi-

6 . . . . *Megasthenes*] Est liber supposititius ab anno Viterbiensi in lucem datus. Megasthenes fuit Rerum Indicarum scriptor, et sæpe a Plinio, Strabone, Solino, Josepho citatur. Sed nullus hujus Megasthenis De Rebus Persicis scribentis meminit.—*M.*

7 . . . . *Justin, where he delivers &c.*] See *Justin, Hist.* lib. 36. Also *Tacitus, Hist.* lib. v.—*K.*

8 . . . . *little more &c.*] Ce que témoigne Carolovitius est digne d'être remarqué, lequel ayant été lui-même en personne dans la plupart des assemblées des Royaumes, et après venant à lire l'histoire de Johannes Sleydanus, touchant ces affaires, et voyant que cet homme écrivoit autrement qu'il n'étoit en vérité dit; les écrits de Johannes Sleydanus font, que j'ai de la peine à croire aucun des anciens écrivains, ou historiographes: un certain honnête bourgeois de Leyden ayant lu presque tous ceux qui avoient écrit des guerres des Pays-Bas, disoit, qu'il ne sçavoit ce qu'il en diroit; à cause que pas un de tous ne s'accorde.—*Fr. Tr.*

9 . . . . *as some will have it,*] These words are wanting in *Edts.* 1642, and *MSS. W. & R.*—*Ed.*

1 . . . . *and do now know, that there are witches.*] Has (sagas) esse probat quotidiana experientia. Vide *Bodini Demonoman.*—*Jac. Angliæ Regis Dæmonolog.*—*Mart. Delrio Disquisitiones Magicas.*—*Wier. De Præstigiis Dæm.*—*M.*

On the subject of witchcraft, in which our author believed, in common with Bacon, Sir Matthew Hale, Bishop Hall, Richard Baxter, Dr. Henry More, Dr. Willis, Glanville, Lavater, &c., a very amusing Essay, by Dr. Ferriar, appeared in the 3d vol. of the Manchester Memoirs. Dr. Hutchinson's Historical Essay on Witchcraft supplies a list of writers on the subject, and a good chronological view of the progress of opinion relative to it. On the authority of this writer has been related, in the Life of Sir Thomas Browne, a remarkable opinion which he gave in court, on a trial of witches, before Sir M. Hale.

MS. R. reads, " . . . . that there are now witches."—*Ed.*

dels, but atheists. Those that, to confute their incredulity, desire to see apparitions, shall, questionless, never behold any, nor have the power to be so much as witches.[2] The devil hath made them already in a heresy as capital as witchcraft; and to appear to them were but to convert them. Of all the delusions wherewith he deceives mortality, there is not any that puzzleth me more than the legerdemain of changelings.[3] I do not credit those transformations of reasonable creatures into beasts, or that the devil hath a power to transpeciate[4] a man into a horse, who tempted Christ (as a trial of his divinity) to convert but stones into bread. I could believe that spirits use with man the act of carnality; and that in both sexes.[5] I conceive they may assume, steal, or contrive a body, wherein there may be action enough to content decrepit lust, or passion to satisfy more active veneries; yet, in both, without a possibility of generation: and therefore that opinion, that Antichrist should be born of the tribe of Dan, by conjunction with the devil,[6] is ridiculous, and a conceit fitter for a rabbin than a Christian. I hold that the devil doth really possess some men; the spirit of melancholy others; the spirit of delusion others: that, as the devil is concealed and denied[7] by some, so God and good angels are pretended by others, whereof the late defection[8] of the maid of Germany* hath left a pregnant example.

* That lived, without meat, on the smell of a rose. *MS. W.*

[2] . . . . *nor have the power &c.*] See *Plin. Nat. Hist.* lib. iii, cap. 1.—*K.*

[3] . . . . *the legerdemain of changelings.*] "The word *(changeling)* arises from an odd superstitious opinion, that the fairies steal away children, and put others that are ugly and stupid in their places." *Johnson.*

"And her base elfin brood there for thee left:
"Such men do *changelings* call, so changed by fairies' theft." *Spencer.*

Our author seems scarcely to question the existence of these fairy exchanges: and the hypothesis on which his German editor proposes to account for them is too curious to be omitted:—*Ed.*

Forsan potest diabolus ex semine et sanguine corpus quoddam in utero sagæ conflare, ex eo, postquam saga illud peperit, sugere vel potius lac maternum furari, loqui, et alia infantum munia præstare. Furatur et interdum aliis matribus suos infantes et illos supponit. Sæpe etiam infantes falso pro suppositiiis habentur.—*M.*

[4] . . . . *transpeciate*] So also *MS. R.*; *Edts.* 1642 and *MS. W.* read, *transplant.—Ed.*

[5] *I could believe &c.*] Vide *S. Chrysostom. in Hom.* 22, *in Gen.—Idem Cyrill.* lib. ix, *contra Jul.—Lactanct.* lib. ii, cap. 15.—*Joseph. Antiq.* lib. i, cap. 4.—*Justin Martyr. Apol.* ii.—*M.*

[6] . . . . *that Antichrist &c.*] Vide de hoc *Augustin. in libro De Antichristo.—Cyrill. Hierosol. Catech.* 15.—*M.*

See *Augustin. in Levit.—Aquin.* i. ii. *De Qu.* 73, *art. ad* 2.—*Justin Martyr. Apol.* i.—*K.*

[7] . . . . *denied*] So *MS. W.*; *Edts.* 1642 read, *deemed.—Ed.*

[8] . . . . *whereof the late defection*] *MS. W.* reads, *detection.—Ed.*

SECT. XXXI.—Again, I believe that all that use sorceries, incantations, and spells, are not witches, or, as we term them, magicians. I conceive there is a traditional magick, not learned immediately from the devil, but at second hand from his scholars, who, having once the secret betrayed, are able and do empirically practise without his advice; they both proceeding upon the principles of nature; where actives, aptly[9] conjoined to disposed passives, will, under any master, produce their effects. Thus, I think, at first, a great part of philosophy was witchcraft; which, being afterward derived to one another, proved but philosophy, and was indeed no more than the honest effects of nature:—what invented by us, is philosophy; learned from him, is magick. We do surely owe the discovery of many secrets to the discovery of good and bad angels. I could never pass that sentence of Paracelsus without an asterisk, or annotation: *ascendens* constellatum multa revelat quærentibus magnalia*[1] *naturæ*, i. e. *opera Dei*.[2] I do think that many mysteries ascribed to our own inventions have been the courteous revelations of spirits;[3] for those noble

* Thereby is meant our good angel, appointed us from our nativity.

9 . . . . *where actives, aptly*] In *Edts.* 1642, " their actives, actively."—*Ed.*

1 . . . . *magnalia*] *animalia* in *Edts.* 1642 and *MS. W.*—*Ed.*

2 . . . . *Dei.*] on peut trouver ces paroles de Paracelsus en son Traité des Images.—*Fr. Tr.*

3 . . . . *have been &c.*] Quod etiam docent Platonici. Vide *Iamblichum De Mysteriis*, p. 52, 53, 54, 55. *Lugduni* 1577; et *Procl. Lib. De Anima et Dæmon.* —*Porphyr.* l. 2. *De Divinis atque Dæmon. Apulei.*—*De Deo Socratis*, p. 331. Ed. *Amstelodam.* Vide et *Geminum Dissertat. Maximi Tyrii De Deo Socratis.*

Vide *Lactant.* l. 2, c. 15, et *Augustin. in Soliloqu.* c. 27, and *Sermon.* 46. *ad Fratres in Eremo.* Vide *Augustin. in Psalm.* 62.—*Auctor in Tractat. De Diligendo Deo.*—*Porphyrius' in Libro De Philosophia Oraculor.* Docet, Deos hominibus indicare quibus capiantur ac gaudeant rebus et quæ vitanda habeant. —*M.*

" Were I inclined to amuse myself with this controversy," says a sensible writer, " I would collect all writings, sacred and prophane, on this subject, and summon various classes of writers to take their several proper shares; *and what remained of pure revelation*, expounded by just reasoning, should be my faith on this article. Pedantic superstition, in the person of James I, would load away sorcery, witchcraft, contracts, devils by wholesale. Pagan presumption would ship off hieroglyphics, astrology, magic, manicheism, &c. Popery would claim a large share of angelography. Vulgar popular observation of effects, and ignorance of causes, would claim a very large proportion of small talk on these occult powers. Fancy, in rhetorical guise, would reduce a volume of well-set words to a page of meaning: the volume must be hers, the page mine. Politicians would take off a large stock of the tutelar tribe. Sound reasoners on demonology would represent the demoniacs of the New Testament as diseased people, of whom the good physician, Jesus, spoke in popular style. These would claim many a text from the subject, and I could not rationally refuse their claim. Bright and black wings, and rays, horns, and cloven feet, would fall to artists. I should, perhaps, at last find,

essences in heaven bear a friendly regard unto their fellow-natures on earth; and therefore believe that those many prodigies and ominous prognosticks, which forerun the ruins of states, princes, and private persons, are the charitable premonitions of good angels,[4] which more careless inquiries term but the effects of chance and nature.

Sect. xxxii.—Now, besides these particular and divided spirits, there may be (for aught I know) a universal and common spirit to the whole world. It was the opinion of Plato,[5] and it is yet of the hermetical philosophers. If there be a common nature, that unites and ties the scattered and divided individuals into one species, why may there not be one that unites them all? However, I am sure there is a common spirit, that plays within us, yet makes no part of us; and that is, the spirit of God; the fire and scintillation of that noble and mighty essence, which is the life and radical heat of spirits, and those essences that know not the virtue of the sun; a fire quite contrary to the fire of hell. This is that gentle heat that brooded on the waters,* and in six days hatched the world: this is that irradiation that dispels the mists of hell, the clouds of horrour, fear, sorrow, despair; and preserves the region of the mind in serenity. Whosoever feels not the warm gale and gentle ventilation of this spirit, (though I feel his pulse) I dare not say he lives; for truly without this, to me, there is no heat under the tropick; nor any light, though I dwelt in the body of the sun.

* Spiritus Domini incubabat aquis. *Gen.* i. *MS. W.*

that the best guardian angel was a good conscience, and the most formidable devils my own depraved passions."—*Collet's Relics of Literature*, p. 302.

4 . . . . *the charitable premonitions of good angels,*] Here again we are reminded of Dr. Johnson's coincidence in feeling with our Author on questions connected with the immaterial world. The following passage from Boswell's Life,—though not so much, perhaps, in reference to what Browne calls "good angels," as to the "angels" of good men, is yet sufficiently illustrative of our position; that these two great men thought, as well as wrote, alike. "As to the invocation of saints, he said, "Though I do not think it authorized, it appears to me that 'the communion of saints' in the Creed means the communion with the saints in heaven, as connected with 'The holy catholic church.'" He admitted the influence of evil spirits upon our minds, and said, "Nobody who believes the New Testament can deny it."—Vol. 4. p. 317.

5 *It was the opinion of Plato,*] Vide *Platon. in Parmenide et Timæo* et *Procl. in Platon. Theol.* l. 1, c. 15.—*Virgil.* l. 6, *Æneid.* Vide plura apud *Portam*, l. 1, *Mag. Natur.* c. 6. Veteres Sinenses fere idem crediderunt. Vide *Trigant.* lib. 1, c. 10, *de Exped. Christ. apud Sinas.*—*M.*

As when the labouring Sun hath wrought his track
Up to the top of lofty Cancer's back,
The icy ocean cracks, the frozen pole
Thaws with the heat of the celestial coal;
So when thy absent beams begin t' impart
Again a solstice on my frozen heart,
My winter 's o'er, my drooping spirits sing,
And every part revives into a spring.
But if thy quickening beams awhile decline,
And with their light bless not this orb of mine,
A chilly frost surpriseth every member,
And in the midst of June I feel December.[6]
Oh how this earthly temper doth debase
The noble soul, in this her humble[7] place!
Whose wingy nature ever doth aspire
To reach that place whence first it took its fire.
These flames I feel, which in my heart do dwell,
Are not thy beams, but take their fire from hell.
O quench them all! and let thy Light divine
Be as the sun to this poor orb of mine!
And to thy sacred Spirit convert those fires,
Whose earthly fumes choke my devout aspires!

Sect. xxxiii.—Therefore, for spirits, I am so far from denying their existence, that I could easily believe, that not only whole countries, but particular persons, have their tutelary and guardian angels. It is not a new opinion of the church of Rome, but an old one[8] of Pythagoras and Plato:[9] there is no heresy in it: and if not manifestly defined in Scripture, yet it is an opinion of a good and wholesome use in the course and actions of a man's life; and would serve as an hypothesis to salve many doubts, whereof common philosophy affordeth no solution. Now, if you demand my opinion and metaphysicks of their natures, I confess them very shallow; most of them in a negative way, like that of God; or in a comparative, between ourselves and fellow-creatures: for there is in this universe a stair, or manifest scale, of creatures, rising not disorderly, or in confusion, but with a comely method and proportion. Between creatures of mere existence and things of life there is a large dispro-

6 . . . . *December.*] Insert, from *Edts.* 1642 and *MSS. W. & R.*, these lines:

Keep still in my Horizon, for, to me,
'T is not the Sun, that makes the day, but thee!—*Ed.*

7 . . . . *humble*] *Edts.* 1642 and *MSS. W. & R.* read, *heavenly.—Ed.*

8 . . . . *but an old one*] These words are omitted in *MSS. W. & R.—Ed.*

9 *It is not a new opinion of the church of Rome, &c.*] This appears by Apuleius, a Platonist, in his book *De Deo Socratis*, and elsewhere. See *Mede's Apostasie of the Latter Times;* where, out of this and other authors, you shall see collected all the learning *de Geniis.—K.*

portion of nature: between plants and animals,[1] or creatures of sense, a wider difference: between them and man, a far greater: and if the proportion hold on, between man and angels there should be yet a greater. We do not comprehend their natures, who retain the first definition of Porphyry;* and distinguish them from ourselves by immortality: for, before his fall, man also was immortal: yet must we needs affirm that he had a different essence from the angels. Having, therefore, no certain knowledge of their nature, 't is no bad method of the schools, whatsoever perfection we find obscurely in ourselves, in a more complete and absolute way to ascribe unto them. I believe they have an extemporary knowledge, and, upon the first motion of their reason, do what we cannot without study or deliberation: that they know things by their forms, and define, by specifical difference, what we describe by accidents and properties: and therefore probabilities to us may be demonstrations unto them: that they have knowledge not only of the specifical, but numerical,[2] forms of individuals, and understand by what reserved difference each single hypostatis (besides the relation to its species) becomes its numerical self: that, as the soul hath a power to move the body it informs, so there 's a faculty to move any, though inform none: ours upon restraint of time, place, and distance: but that invisible hand that conveyed Habakkuk to the lion's den,[3] or Philip to Azotus, infringeth this rule, and hath a secret conveyance, wherewith mortality is not acquainted. If they have that intuitive knowledge, whereby, as in reflection, they behold the thoughts of one another, I cannot peremptorily deny but they know a great part of ours. They that, to refute the invocation of saints, have denied that they have any knowledge of our affairs below, have proceeded too far, and must pardon my opinion, till I can thoroughly answer that piece of Scripture, "At the conversion of a sinner, the angels in heaven rejoice." I cannot,

* Essentiæ rationalis immortalis. *MS. W.*

1 . . . . *plants and animals,*] So the *MSS. W. & R.; Edts.* 1642 read, "two plant-animals."—*Ed.*

2 . . . . *numerical,*] So *MS. R.; MS. W.* and *Edts.* 1642 read, *natural.*—*Ed.*

3 . . . . *that conveyed Habakkuk to the lion's den,*] See *Bel* and *The Dragon*, ver. 36, &c.—*Ed.*

with those in that great father,[4] securely interpret the work of the first day, *fiat lux*, to the creation of angels; though I confess there is not any creature that hath so near a glimpse of their nature as light in the sun and elements: we style it a bare accident;[5] but, where it subsists alone, 't is a spiritual substance, and may be an angel:[6] in brief, conceive light invisible, and that is a spirit.

Sect. xxxiv.—These are certainly the magisterial and masterpieces of the Creator;[7] the flower, or, as we may say, the best part of nothing; actually existing, what we are but in hopes, and probability. We are only that[8] amphibious piece, between a corporeal and a spiritual essence; that middle form, that links those two together, and makes good the method of God and nature, that jumps not from extremes, but unites the incompatible distances by some middle and participating natures. That we are the breath and similitude of God, it is indisputable, and upon record of Holy Scripture: but to call ourselves a microcosm, or little world, I thought it only a pleasant trope of rhetorick, till my near judgement and second thoughts told me there was a real truth therein. For, first we are a rude mass, and in the rank of creatures which only are, and have a dull kind of being, not yet privileged with life, or preferred to sense or reason; next we live the life of plants, the life of animals, the life of men, and at last the life of spirits: running on, in one mysterious nature, those five kinds of existences, which comprehend the creatures, not only of the world, but of the universe. Thus is man that[9] great and true *amphibium*, whose nature is disposed to live, not only like other creatures in divers elements, but in divided and distinguished worlds; for though there be but one [world][1] to sense, there

4 *I cannot, with those, &c.*] Alluding probably to St. Augustine; *De Civit. Dei*, lib, xi, cap. 9, 19, 32. Keck, however, as well as the French translator, considers the allusion to refer rather to St. Chrysostom, in his Homily on Genesis.

All the *MSS.* and *Edts.* 1642 read, "with that great Father."—*Ed.*

5 *we style it a bare accident;*] *MSS. W. & W.* 2 read, "while we style it, &c." *Edts.* 1642 read, "while we style a bare accident."—*Ed.*

6 *where it subsists alone, 't is, &c.*] Epicurus was of this opinion; also St. Augustine: see *Enchirid. ad Laurentium.*—*K.*

Vide *Rob. Flud. in Historia Microcosmi*, tract. i, § 1, lib. iii, cap. 3:—*et Marsil. Ficin. in lib. de Lumine*, cap. 1. 6, 13.—*M.*

7 *Creator;*] All the *MSS.* and *Edts.* 1642 read, *creature.*—*Ed.*

8 *that*] All the *MSS.* and *Edts.* 1642 read, *the.*—*Ed.*

9 *Thus is man that*] *Edts.* 1642 read, "this is man the...."—*Ed.*

1 [*world*] So in all the *MSS.*—*Ed.*

are two to reason, the one visible, the other invisible; whereof Moses seems to have left description, and of the other so obscurely, that some parts thereof are yet in controversy. And truly, for the first chapters of Genesis,[2] I must confess a great deal of obscurity; though divines have, to the power of human reason, endeavoured to make all go in a literal meaning, yet those allegorical interpretations are also probable, and perhaps the mystical method of Moses, bred up in the hieroglyphical schools of the Egyptians.[3]

Sect. xxxv.—Now for that immaterial world, methinks we need not wander so far as the first moveable;[4] for, even in this material fabrick, the spirits walk as freely exempt from the affection[5] of time, place, and motion, as beyond the extremest circumference. Do but extract[6] from the corpulency of bodies, or resolve things beyond their first matter, and you discover the habitation of angels;[7] which if I call the ubiquitary and omnipresent essence of God, I hope I shall not offend divinity: for, before the creation of the world, God was really all things. For the angels he created no new world, or determinate mansion, and therefore they are every where where is his essence, and do live, at a distance even, in himself. That God made all things for man, is in some sense true; yet, not so far as to subordinate the creation of those purer creatures unto ours; though, as ministering spirits, they do, and are willing to fulfil, the will of God in these lower and sublunary affairs of man.[8] God made all things for himself; and it is impossible he should make them for any other end than his own

2 *the first chapters of Genesis,*] So in all the earlier Editions, and the Latin, French, and Dutch, translations: *MSS. R.* and *W.* 2 read "first chapters of Moses;" *MS. W.* "those last chapters;" *Edts.* 1642, "the last chapter." The Editions of 1672, 1686, & 1736, all read "the first chapter." —*Ed.*

3 *whereof Moses, &c.*] This passage is not very clearly expressed. It seems however to allude to discussions which had arisen respecting the Mosaic descriptions of creation:—whether they were to be received literally, as referring to the visible world only; or whether they might not be intended, also, to convey an allegorical picture of the other or invisible world.—*Ed.*

It was a rule among the Jewish preceptors that their disciples should not read the first chapter of Genesis, the Canticles of Solomon, nor the latter part of Ezekiel, till they were thirty years old.—*Ed.* 1736.

4 *first moveable;*] *primum mobile.*—*M.*

5 *exempt from the affection of, &c.*] In the sense of *not affected by* —*Ed.*

6 *extract*] *abstract, in MS. W.*—*Ed.*

7 *the habitation of angels;*] De illorum loco, aut habitatione. Vid. *Maldonat. De Angelis*, c. 16.—*M.*

8 *That God made, &c.*] Sunt qui ad probandum eos (spiritus) simul cum orbe condito creatos esse, statuunt hominum causa creatos. Vide *Maldonati in Tract. de Angel.* c. 3.—*M.*

glory: it is all he can receive, and all that is without himself. For, honour being an external adjunct, and in the honourer rather than in the person honoured, it was necessary to make a creature, from whom he might receive this homage: and that is, in the other world, angels, in this, man; which when we neglect, we forget the very end of our creation, and may justly provoke God, not only to repent that he hath made the world, but that he hath sworn he would not destroy it. That there is but one world, is a conclusion of faith; Aristotle with all his philosophy hath not been able to prove it:[9] and as weakly that the world was eternal; that dispute much troubled the pen of the ancient philosophers, but Moses decided that question, and all is salved with the new term of a creation,—that is, a production of something out of nothing. And what is that?—whatsoever[1] is opposite to something; or, more exactly, that which is truly contrary unto God: for he only is; all others have an existence with dependency,[2] and are something but by a distinction.[3] And herein is divinity conformant unto philosophy, and not only generation founded on contrarieties, but also creation. God, being all things, is contrary unto nothing; out of which were made all things, and so nothing became something, and omneity informed[4] nullity into an essence.[5]

SECT. XXXVI.—The whole creation is a mystery, and par-

9 *Aristotle, &c.*] Docet tamen ille, plures haud esse mundos. Vid. lib. i, *De Cœlo*, c. 8, 9.—*M.*

1 *and what is that?—Whatsoever, &c.*] All the *MSS.* and *Edts.* 1642 read, "... and that is whatsoever, &c."—*Ed.*

2 *dependency,*] All the *MSS.* and *Edts.* 1642 read, *depending.*—*Ed.*

3 *by a distinction.*] *MSS. W. & R.* and *Edts.* 1642 read, "by distinction." The rest of the section is omitted, in these and in *MS. W.* 2.—*Ed.*

4 *informed*] In the sense of *animated.*—*Ed.*

5 *God, being all things, &c.*] The following remarks on this passage have been pointed out to me, by my obliging friend, E. H. Barker, Esq. of Thetford.

"That celebrated philosopher, shall I call him, or atheist? who said that the assemblage of all existence constituted the divine essence, who would have us to consider all corporeal beings as the body of the divinity, published a great extravagance, if he meant that the divine essence consisted of this assemblage. But there is a very just sense, in which it may be said that the whole universe is the body of the Deity. As I call this portion of matter my body, which I move, act, and direct as I please, so God actuates by his will every part of the universe—he obscures the sun—he calms the winds—he commands the sea. But this very notion excludes all corporeity from God, and proves that God is a spirit. If God sometimes represents himself with feet, with hands, with eyes, he means in the portraits rather to give to us emblems of his attributes, than images (properly speaking) of any parts, which he possesseth: therefore when he attributes these to himself, he gives to them so vast an extent, that we easily perceive that they are not to be grossly understood. Hath he hands? They are hands, which 'weigh

ticularly that of man. At the blast of His mouth were the rest of the creatures made; and at his bare word they started out of nothing: but in the frame of man (as the text describes it) he played the sensible operator, and seemed not so much to create as make him. When he had separated the materials of other creatures, there consequently resulted a form and soul; but, having raised the walls of man, he was driven to a second and harder creation,—of a substance like himself, an incorruptible and immortal soul.[6] For these two affections[7] we have the philosophy[8] and opinion of the heathens, the flat affirmative of Plato,[9] and not a negative from Aristotle.[1] There is another scruple cast in by divinity concerning its production, much disputed in the German auditories, and with that indifferency[2] and equality of arguments, as leave the controversy undetermined.[3] I am not of Paracelsus's mind, that boldly delivers a receipt to make a man without conjunction;[4] yet cannot but wonder at the multitude of heads that do deny traduction, having no other argument to confirm their belief than that

the mountains in scales and the hills in a balance,' which 'measure the waters in the hollow of his hand, and mete out the heavens with a span.' (Isai. xl, 12.) Hath he eyes? They are eyes, which penetrate the most unmeasurable distances. Hath he feet? They are feet, which reach from heaven to earth; for 'the heaven is his throne, and the earth is his footstool.' (xlvi, 1.) Hath he a voice? It is as 'the sound of many waters, breaking the cedars of Lebanon, making Mount Sirion skip like an unicorn, and the hinds to calve.' (Ps. xxix, 3. 5. 6. 9.)" *Saurin's Discourses, transl. by Robert Robinson.*

In *MSS. R. & W.* 2, the next sentence is omitted, ("For these two, &c.")—*Ed.*

6 *and harder creation, &c.*] Vide *Augustinum, De animæ immortalitate.—M.*

7 *affections*] In the sense of *properties, qualities;* "proprietates," in the Latin translation.

8 *For these two, &c.*] *MS. W. & Edts.* 1642 read, "For the two assertions we have in Philosophie, &c."

The two qualities alluded to are incorruptibility and immortality.—*Ed.*

9 *the flat affirmative of Plato,*] In *Phædone, Opera,* tom. i, p. 183, *Ed. Bipont. Timæo, Ib.* t. ix, p. 431, 432; *Phædro, Ib.* t. x, p. 318, 319, 321.—*Ed.*

1 *not a negative from Aristotle.*] Vide *Aristotel. De Anima,* l. ii, text. 4 et 19, 21, 22. *De Generatione Animal.* ii, c. 3, dicit, "Solam mentem extrinsecus advenire, divinam esse solam, neque cum ejus actione actionem corporis ullam habere communionem."—*M.*

2 *indifferency*] In the sense of *equipoise.—Ed.*

3 *There is another scruple, &c.*] Namely, "An ex traduce sint animæ sicut et corpora?" *Augustin. Quæstion. Vet. Test.* qu. 23.

Vide *Tolet.* lib. iii; *Aristot. De anima,* c. 5, qu. 17; *Burgesdicium,* in *Coll. Phys. Disputat.* 29.—*M.*

4 *that boldly delivers a receipt, &c.*] "Paracelsus has revealed to us one of the grandest secrets of nature. When the world began to dispute on the very existence of the elementary folk, it was then he boldly offered to give birth to a fairy, and has sent down to posterity the recipe. He describes the impurity which is to be transmuted into such purity, the gross elements of a delicate fairy, which, fixed in a phial in fuming dung, will in due time settle into a full-grown fairy, bursting through its vitreous prison—on the vivifying principle by which the ancient Egyptians hatched their eggs in

rhetorical sentence and *antimetathesis*[5]* of Augustine, *creando infunditur, infundendo creatur.* Either opinion will consist well enough with religion: yet I should rather incline to this, did not one objection haunt me, not wrung from speculations and subtilties, but from common sense and observation; not pick'd from the leaves of any author,[6] but bred amongst the weeds and tares of my own brain. And this is a conclusion from the equivocal and monstrous productions in the copulation of a man with a beast:[7] for if the soul of man be not transmitted and transfused in the seed of the parents, why are not those productions merely beasts, but have also an impression and tincture of reason in as high a measure, as it can evidence itself in those improper organs? Nor, truly, can I peremptorily[8] deny that the soul, in this her sublunary estate, is wholly, and in all acceptions,[9] inorganical; but that, for the performance of her ordinary actions, is required not only a symmetry and proper disposition of organs, but a crasis and temper correspondent to its operations; yet is not this mass of flesh and visible structure the instrument and proper corpse of the soul, but rather of sense, and that the hand[1] of reason. In our study of anatomy there is a mass of mysterious philosophy, and such as reduced the very heathens to divinity; yet,

* *Antanaclasis.*—A figure in rhetoric, where one word is inserted upon another. —*MS. W.*

ovens. I recollect at Dr. Farmer's sale the leaf which preserved this recipe for making a fairy, forcibly folded down by the learned commentator; from which we must infer the credit he gave to the experiment. There was a greatness of mind in Paracelsus, who, having furnished a recipe to make a fairy, had the delicacy to refrain. Even Baptista Porta, one of the most enlightened philosophers, does not deny the possibility of engendering creatures, which "at their full growth shall not exceed the size of a mouse:" but he adds that "they are only pretty little dogs to play with." Were these akin to the fairies of Paracelsus?" *D'Israeli's Second Series of Curiosities of Literature*, vol. iii, p. 14, 15.—*Ed.*

5 antimetathesis] All the *MSS.* and *Edts.* 1642 read, "antanaclasis."*—*Ed.*

6 *author,*] *Edts.* 1642 read, *other.*—*Ed.*

7 *from the equivocal, &c.*] The French translator not only refers to several authorities for the existence of such things, but asserts that he had seen one himself. "Touchant cette affaire, Jean Baptiste, *Mag. Nat.* lib. ii, cap. 12, raconte ou rapporte quelques exemples, qu'il a prises, ou tirées de Plinius, Plutarchus, Ælianus, et autres. Les ecrivains ou auteurs temoignent, que cela arrive encore aux Indes en plusieurs endroits; et moimême en ai vu un à Leyden."

Blumenbach however rejects such stories, as fabulous tales which do not need contradiction.—*Ed.*

8 *peremptorily*] So in *MSS. R. & W.* 2; *MS. W.* and *Edts.* 1642 read, *reasonably.*—*Ed.*

9 *and in all acceptions,*] Omitted in all the *MSS.* and *Edts.* 1642.—*Ed.*

1 *the hand*] All the *MSS.* and *Edts.* 1642 read, "the nearer *ubi.*"—*Ed.*

amongst all those rare discoveries and curious pieces I find in the fabrick of man, I do not so much content myself, as in that I find not,—that is, no organ or instrument for the rational soul; for in the brain, which we term the seat of reason, there is not any thing of moment more than I can discover in the crany of a beast: and this is a sensible and no inconsiderable argument of the inorganity of the soul, at least in that sense we usually so receive it.[2] Thus we are men, and we know not how; there is something in us that can be without us, and will be after us, though it is strange that it hath no history what it was before us, nor cannot tell how it entered in us.[3]

SECT. XXXVII.—Now, for these walls of flesh, wherein the soul doth seem to be immured before the resurrection, it is nothing but an elemental composition, and a fabrick that must[4] fall to ashes. "All flesh is grass," is not only metaphorically, but literally, true; for all those creatures we behold are but the herbs of the field, digested into flesh in them, or more remotely carnified in ourselves. Nay, further, we are what we all abhor, *anthropophagi* and cannibals, devourers not only of men, but of ourselves; and that not in an allegory but a positive truth: for all this mass of flesh which we behold, came in at our mouths; this frame we look upon, hath been upon our

2 *and this is a sensible, &c.*] This concluding part of the sentence is omitted in all the *MSS.* and *Edts.* 1642.—*Ed.*

3 *In our study of anatomy, &c.*] "What a contrast," says Dr. Drake, after quoting this and several other similar passages, "do these admirable quotations form, when opposed to the scepticism of the present day, to the doctrines of the physiological materialists of the school of Bichat! A system of philosophy, if so it may be called, which, should it ever unhappily prevail in the medical world, would render the often-repeated, though hitherto ill-founded, sarcasm against the profession, *ubi tres medici, duo Athei*, no longer a matter of calumny.

"It is, however, with pride and pleasure that, at a period when scepticism has been obtruded upon us as a topic of distinction and triumph, and even taught in our public schools, we can point to a roll of illustrious names, the most consummate for their talent among those who have made the study of life, and health and disease their peculiar profession, who have publicly borne testimony to their firm belief in the existence of their God, and in the immortality of the human soul. When Galen, meditating on the structure and functions of the body, broke forth into that celebrated declaration, *Compono hic profecto Canticum in creatoris nostri laudem*, he but led the way to similar but still more important avowals from the mighty names of Boerhaave and of Haller, of Sydenham and of Browne, and of Mead; men unrivalled for their professional sagacity, and alike impressed with the deepest conviction of one great first cause of future being and of eternity, "that ancient source as well as universal sepulchre of worlds and ages, in which the duration of this globe is lost as that of a day, and the life of man as a moment." *Drake's Evenings in Autumn*, vol. ii, p. 71—73.—*Ed.*

4 *must*] *Edts.* 1642 read, *may.*—*Ed.*

trenchers; in brief, we have devoured ourselves.[5] I cannot believe the wisdom of Pythagoras did ever positively, and in a literal sense, affirm his metempsychosis, or impossible transmigration of the souls of men into beasts.[6] Of all metamorphoses or transmigrations, I believe only one, that is of Lot's wife; for that of Nabuchodonosor proceeded not so far. In all others I conceive there is no further verity than is contained in their implicit sense and morality. I believe that the whole frame of a beast doth perish, and is left in the same state after death as before it was materialed unto life: that the souls of men know neither contrary nor corruption; that they subsist beyond the body, and outlive death by the privilege of their proper natures, and without a miracle: that the souls of the faithful, as they leave earth, take possession of heaven: that

5 *Nay, further, &c.*] The Latin annotator is not content to receive this singular passage literally, as the author clearly intended it. He gives the following notes;

"*Ipsi anthropophagi sumus.*] Ut embryones in utero matris; nam mater ex proprio corpore nutrimentum illis præbet: nutriuntur etiam postea ex utero matris egressi lacte fœminino.

"*Sed et nos ipsos devorare soliti.*] Nam mœsti et invidi proprium cor comedere dicuntur.—*Ed.*

6 *I cannot believe, &c.*] The metempsychosis may perhaps be supposed to have arisen out of the belief which the early philosophers adopted of the immortality of the soul. It has been said that Pythagoras not only believed in the doctrine of the transmigration of souls literally; but even went so far as to assert his recollection of the various bodies which his own soul had inhabited; attributing his remembrance to the special grace of Mercury.

"The opinion of the metempsychosis spread in almost every region of the earth; and it continues, even to the present time, in all its force amongst those nations who have not yet embraced christianity. The people of Arracan, Peru, Siam, Camboya, Tonquin, Cochin-China, Japan, Java, and Ceylon, still entertain that fancy, which also forms the chief article of the Chinese religion. The Druids believed in transmigration. The bardic triads of the Welsh are full of this belief: and a Welsh antiquary insists that by an emigration which formerly took place, it was conveyed to the Bramins of India from Wales! It is on this system of transmigration that Taliessin the Welsh bard, who wrote in the sixth century, gives a recital of his pretended transmigrations. He tells how he had been a serpent, a wild ass, a buck, or a crane, &c.; and this kind of reminiscence of his former state, this recovery of memory, was a proof the mortal's advances to the happier circle. For to forget what we have been, was one of the curses of the circle of evil. According to the authentic Clavigero, in his history of Mexico, we find the Pythagorean transmigration carried on in the west, and not less fancifully than in the countries of the east. The people of Tlascala believe that the souls of persons of rank went after their death to inhabit the bodies of *beautiful and sweet singing birds*, and those of the *nobler quadrupeds;* while the souls of inferior persons were supposed to pass into *weazels, beetles*, and such other *meaner animals.*" *D'Israeli's Curiosities of Literature*, vol. ii, p. 49—52.—*Ed.*

With respect to the real opinions of Pythagoras, on this subject, see *Bulstrode's Essay on Transmigration;* Dr. Stackhouse's preface to the *Chinese Tales;* and Taylor's translation of *Jamblichus's Life of Pythagoras.* On the Jewish notions respecting the doctrine of transmigration, see *Stehelin's Rabbinical Literature*, vol. i, p. 277—338.—*E. H. B.*

those apparitions and ghosts of departed persons are not the wandering souls of men, but the unquiet walks of devils, prompting and suggesting us unto mischief, blood and villainy; instilling and stealing into our hearts that the blessed spirits are not at rest in their graves, but wander, solicitous of the affairs of the world. But that those phantasms appear often, and do frequent cemeteries, charnel-houses, and churches, it is because those are the dormitories of the dead, where the devil, like an insolent champion, beholds[7] with pride the spoils and trophies of his victory in Adam.[8]

SECT. XXXVIII.—This is that dismal conquest we all deplore, that makes us so often cry, O Adam, *quid fecisti?* I thank God I have not those strait ligaments, or narrow obligations to the world, as to dote on life, or be convulsed and tremble at the name of death. Not that I am insensible of the dread and horror thereof; or, by raking into the bowels of the deceased, continual sight of anatomies, skeletons, or cadaverous relicks, like vespilloes, or grave-makers, I am become stupid, or have forgot the apprehension of mortality; but that, marshaling all the horrours, and contemplating the extremities thereof, I find not any thing therein able to daunt the courage of a man, much less a well-resolved christian; and therefore am not angry at the errour of our first parents, or unwilling to bear a part of this common fate, and, like the best of them to die; that is, to cease to breathe, to take a farewell of the elements; to be a kind of nothing for a moment; to be within one instant of a spirit.[9] When I take a full view and circle of

[7] *beholds*] So all the *MSS.; Edts.* 1642 read, *holds.—Ed.*

[8] *that those apparitions and ghosts of departed persons, &c.*] Vide *Chrysostomum, in Homil.* 29 *in Matthæum; Augustin. De Cura pro mortuis*, c. 10, 16, et seqq.—*M.*

See Sir K. Digby's criticism on this passage.

Modern philosophers of the school of Schott, Gaffarel, &c. have a ready solution, in their *Palingenesis*, for the apparitions of animals as well as plants. "Thus the dead naturally revive; and a corpse may give out its shadowy reanimation, when not too deeply buried in the earth. Bodies corrupted in their graves have risen, particularly the murdered; for murderers are apt to bury their victims in a slight and hasty manner. Their salts, exhaled in vapour by means of their fermentation, have arranged themselves on the surface of the earth, and formed those phantoms, which at night have often terrified the passing spectator, as authentic history witnesses. They have opened the graves of the phantom, and discovered the bleeding corpse beneath: hence it is astonishing how many ghosts may be seen at night, after a recent battle, standing over their corpses!" *D'Israeli's Second Series of Curiosities of Literature*, vol. iii, p. 17.—*Ed.*

[9] *one instant of a spirit.*] So in *MSS. R. & W.* 2; *Edts.* 1642 and *MS. W.* read, "in one instant a spirit."—*Ed.*

myself without[1] this reasonable moderator, and equal piece of justice, death, I do conceive myself the miserablest person extant. Were there not another life that I hope for, all the vanities of this world should not entreat a moment's breath from me. Could the devil work my belief to imagine I could never die, I would not outlive that very thought. I have so abject a conceit[2] of this common way of existence, this retaining to the sun and elements, I cannot think this is to be a man, or to live according to the dignity of humanity.[3] In expectation of a better, I can with patience embrace this life; yet, in my best meditations, do often defy[4] death. [It is a symptom of melancholy to be afraid of death, yet sometimes to desire it; this latter I have often discovered in myself, and think no man ever desired life, as I have sometimes death.[5]] I honour any man that contemns it; nor can I highly love any that is afraid of it: this makes me naturally love a soldier, and honour those tattered and contemptible regiments, that will die at the command of a sergeant. For a pagan there may be some motives to be in love with life; but, for a christian to be amazed at death, I see not how he can escape this dilemma—that he is too sensible of this life, or hopeless[6] of the life to come.[7]

SECT. XXXIX.—Some divines count Adam thirty years old at his creation,[8] because they suppose him created in the perfect age and stature of man: and surely we are all out of the computation of our age; and every man is some months older than he bethinks him; for, we live, move, have a being, and are subject to the actions of the elements, and the malice of diseases, in that other world, the truest microcosm, the womb of our mother; for besides that general and com-

1 *without*] So in *MS. R.*; *MS. W.* and *Edts.* 1642 read, *but with*. *MS. W.* 2 reads, *with but*.—*Ed.*

2 *conceit*] So in *MSS. R. & W.* 2; *Edts.* 1642 and *MS. W.* read, *thought*.—*Ed.*

3 *humanity.*] All the *MSS.* and *Edts.* 1642 read, *my nature*.—*Ed.*

4 *defy*] All the *MSS.* and *Edts.* 1642 read, *desire*.—*Ed.*

5 [*It is a symptom, &c.*] This passage is inserted from *MSS. W.* 2 *& R.*; it is not in any edition.—*Ed.*

6 *hopeless*] All the *MSS.* and *Edts.* 1642 read, *careless*.—*Ed.*

7 *I thank God, &c.*] "To arm us against the fears of dissolution, volumes upon volumes have been written; but, if we except our hallowed Scriptures, I know not where, in a style so condensed and striking, or on a basis more truly Christian, we can find a better dissuasive, under a confessional form at least, against the inordinate love of life, and the apprehensions of death, than what this passage affords us." *Drake's Evenings in Autumn*, vol. ii, p. 92.—*Ed.*

8 *Some divines, &c.*] Vide *Augustin.* l. 6, *de Genes. ad liter.* c. 13.—*M.*

mon existence we are conceived to hold in our chaos, and whilst we sleep within the bosom of our causes, we enjoy a being and life in three distinct worlds, wherein we receive most manifest gradations. In that obscure world, the womb of our mother, our time is short, computed by the moon; yet longer than the days of many creatures that behold the sun; ourselves being not yet without life, sense, and reason;[9] though, for[1] the manifestation of its actions, it awaits the opportunity of objects, and seems to live there but in its root and soul of vegetation. Entering afterwards upon the scene of the world, we rise up and become another creature; performing the reasonable actions of man, and obscurely manifesting that part of divinity in us,[2] but not in complement and perfection, till we have once more cast our secundine, that is this slough of flesh, and are delivered into the last world, that is, that ineffable place of Paul, that proper[3] *ubi* of spirits. The smattering I have of the philosophers' stone (which is something more than[4] the perfect exaltation[5] of gold) hath taught me a great deal of divinity, and instructed my belief, how that immortal spirit and incorruptible substance of my soul may lie obscure, and sleep awhile[6] within this house of flesh. Those strange and mystical transmigrations that I have observed in silkworms turned my philosophy into divinity. There is in these works of nature, which seem to puzzle reason, something divine; and hath more in it than the eye of a common spectator doth discover.

SECT. XL.—I am naturally bashful; nor hath conversation, age, or travel, been able to effront or enharden me; yet I have one part of modesty, which I have seldom discovered in another, that is, (to speak truly) I am not so much afraid of death as ashamed thereof; 't is the very disgrace and ignominy of our natures, that in a moment can so disfigure us, that our nearest friends, wife, and children, stand afraid,

9 *not without life, sense, and reason;*] In perfect consistency with this opinion, Sir Thomas wrote *a Dialogue between two twins in the womb, respecting the world into which they were going.*—Alas! we have hunted for this *morceau* in vain!—It seems to have perished.—*Ed.*

1 *though, for*] Not in *Edts.* 1642.—*Ed.*

2 *us,*] All the *MSS.* and *Edts.* 1642 read, *use.*—*Ed.*

3 *proper*] Not in *Edts.* 1642.—*Ed.*

4 *something more than*] All the *MSS.* and *Edts.* 1642 read, "nothing else but."—*Ed.*

5 *exaltation*] In the sense of *purification.*—*Ed.*

6 *awhile*] So in *MSS. R. & W.* 2; omitted in *MS. W.* and *Edts.* 1642.—*Ed.*

and start[7] at us. The birds and beasts of the field, that before, in a natural fear, obeyed us, forgetting all allegiance, begin to prey upon us. This very conceit hath, in a tempest, disposed and left me willing to be swallowed up in the abyss of waters, wherein I had perished unseen, unpitied, without wondering eyes, tears of pity, lectures of mortality, and none had said, *Quantum mutatus ab illo!* Not that I am ashamed of the anatomy of my parts, or can accuse nature of playing the bungler in any part of me, or my own vicious life for contracting any shameful disease upon me, whereby I might not call myself as wholesome a morsel for the worms as any.

SECT. XLI.—Some, upon the courage of a fruitful issue, wherein, as in the truest chronicle, they seem to outlive themselves,[8] can with greater patience away with death. This conceit and counterfeit subsisting in our progenies seems to me a mere fallacy, unworthy the desires of a man, that can but conceive a thought of the next world; who, in a nobler ambition, should desire to live in his substance in heaven, rather than his name and shadow in the earth.[9] And therefore, at my death, I mean to take a total adieu of the world, not caring for a monument, history, or epitaph; not so much as the bare memory of my name to be found any where, but in the universal register of God. I am not yet so cynical, as to approve the testament of Diogenes,*[1] nor do I altogether allow[2] that rodomontado of Lucan;[3]

> ——*Cœlo tegitur, qui non habet urnam.*
>
> He that unburied lies wants not his hearse;
> For unto him a tomb 's the universe.

but commend, in my calmer judgement, those ingenuous intentions that desire to sleep by the urns of their fathers, and

* Who willed his friend not to bury him, but to hang him up with a staff in his hand, to fright away the crows.

7 *start*] So all the *MSS.*; *Edts.* 1642 read, *stare.*—*Ed.*

8 *as in the truest chronicle, &c.*] Eleganter *Cic.* l. 6, *De Republica, in Somnio Scipionis.*—*M.*

9 *rather than, &c.*] This clause is in *MS. W.* 2; it is not in *Edts.* 1642, nor in the text of *MSS. W. & R.*, but is inserted in the margin of these *MSS.*—*Ed.*

1 *I am not yet so, &c.*] This clause, with the note at "Diogenes" is not in *MS. R.*—*Ed.*

2 *allow*] *Edts.* 1645, 1659, 1672, and 1686, read, *follow.*—*Ed.*

3 *Lucan;*] *Pharsalia*, lib. vii, 819. *MS. W.* and *Edts.* 1642 read, *Lucian.*—*Ed.*

strive to go the neatest[4] way unto corruption. I do not envy the temper[5] of crows and daws,[6] nor the numerous and weary days of our fathers before the flood. If there be any truth in astrology, I may out-live a jubilee;* as yet I have not seen one revolution of Saturn,† nor hath my pulse beat thirty years, and yet, excepting one,[7] have seen the ashes of, and left under ground, all the kings of Europe; have been contemporary to three emperours, four grand signiors, and as many popes:[8] methinks I have outlived myself, and begin to be weary of the sun;[9] I have shaken hands with delight[1] in my warm blood and canicular days; I perceive I do anticipate[2] the vices of age; the world to me is but a dream or mock-show, and we all therein but pantaloons and anticks, to my severer contemplations.

Sect. xlii.—It is not, I confess, an unlawful prayer to desire to surpass the days of our Saviour, or wish to outlive that age wherein he thought fittest to die; yet, if (as divinity af-

* The Jewish computation for 50 years.—*MS. W.*

† The planet Saturn maketh his revolution once in 30 years.—*MS. W.*

4 *neatest*] So *Edts.* 1643, 1645, 1678, 1682, 1736, and the foreign *Edts.* All the *MSS.* and *Edts.* 1642, 1659, 1672, and 1686, read, *nearest.—Ed.*

5 *temper*] In the sense of *temperament, constitution—Ed.*

6 *I do not envy, &c.*] As Theophrastus did, who, dying, accused nature for giving them, to whom it could not be of any concernment, so large a life; and to man, whom it much concerned, so short a one. *Cic. Tusc. Quæst.* l. 3. How long *daws* live, see *Not. ad Sect.* 41.—*K.*

It is clear, from this reference to a note about daws, as well as from other similar evidences, that Keck annoted on the *Edit.* 1643; for in those of 1642, the words, "and daws," do not occur. The note, however, is not to be found; and for that reason, probably, the reference to it is omitted in the *Edit.* 1686. Keck perhaps wrote the above as a memorandum only, with the intention of inserting some observations on the subject; but, through inadvertence, neither wrote the observations, nor erased the reference.

On the longevity of crows, see *Pseud. Epid.* book iii, ch. 9.—*Ed.*

Buffon says that the Raven lives above 100 years. Sonnini quotes the following passage from Pliny (l. vii, c. 48); "Hesiodus.... cornici novem nostras attribuit ætates; quadruplum ejus cervis; id triplicatum corvis;"—which he proposes to reconcile with fact, by rendering *ætas*, 'year.' The crow thus is said to attain to 9 years of age, the stag to 36, the raven to 108; which is true. See *Buffon par Sonnini*, tom. xliv, p. 40.—*Ed.*

7 *excepting one,*] Christiern IV, King of Denmark, who reigned from 1588 to 1647.—*Ed.*

8 *have been contemporary to, &c.*] Rodolph II, Matthias, & Ferdinand II, Emperours of Germany;—Achmet I, Mustapha I, Othman II, and Amurath IV, Grand Signiors; Leo XI, Paul V, Gregory XV, and Urban VIII, Popes.

Our author, however, in reckoning himself contemporary with Leo XI, must have proceeded on his own fanciful principle of computation, laid down in § 39,—"that every man is some months older than he bethinks him:" and thus he might as well have counted *five* Popes;—for Clement VIII died March 3, 1605; Leo XI was crowned on the 26th April; and Paul V on the 29th of May, of the same year;—about six months before Sir Thomas Browne was born.—*Ed.*

9 *sun;*] *same*, in all the *MSS.* and *Edts.* 1642.—*Ed.*

1 *shaken hands with delight*] "taken leave of it."—*Ed.*

2 *anticipate*] So in *MSS. W. 2 & R.*; *Edts.* 1642 and *MS. W.* read, *participate.—Ed.*

firms) there shall be no grey hairs in heaven, but all shall rise in the perfect state of men, we do but outlive those perfections in this world, to be recalled unto[3] them by a greater miracle in the next, and run on here but to be retrograde hereafter. Were there any hopes to outlive vice, or a point to be superannuated from sin, it were worthy our knees to implore the days of Methuselah. But age doth not rectify, but incurvate our natures, turning bad dispositions into worser habits, and (like diseases) brings on incurable vices; for every day, as we grow weaker in age, we grow stronger in sin; and the number of our days doth but make our sins innumerable. The same vice, committed at sixteen, is not the same, though it agrees in all other circumstances, at forty; but swells and doubles from the circumstance of our ages, wherein, besides the constant and inexcusable habit of transgressing, the maturity of our judgement cuts off pretence unto excuse or pardon. Every sin, the oftener it is committed, the more it acquireth in the quality of evil; as it succeeds in time, so it proceeds in degrees of badness; for as they proceed they ever multiply, and, like figures in arithmetick, the last stands for more than all that went before it.[4] And, though I think no man can live well once, but he that could live twice, yet, for my own part, I would not live over my hours past, or begin again the thread of my days; not upon Cicero's ground, because I have lived them well,[5] but for fear I should live them worse. I find my growing judgement daily instruct me how to be better, but my untamed affections and confirmed vitiosity make me daily do worse. I find in my confirmed age the same sins I discovered in my youth; I committed many then because I was a child; and, because I commit them still, I am yet an infant. Therefore I perceive a man may be twice a child, before the days of dotage; and stand in need of Æson's bath before threescore.[6]

[3] *unto*] *Edts.* 1642 read, *by.*—*Ed.*

[4] *before it.*] In all the *MSS.* and *Edts.* 1642, the remainder of this section and the whole of the next are omitted; and the following passage occurs:—"the course and order of my life would be a very death to others; I use myself to all diets, humours, airs, hunger, thirst, cold, heat, want, plenty, necessity, dangers, hazards: when I am cold, I cure not myself by heat, when I am sick, not by physick; those that know how I live, may justly say I regard not life, nor stand in fear of death."—*Ed.*

[5] *Cicero's ground,*] "Quod reliquum est, te sustenta, mea Terentia, ut potes, honestissime viximus, floruimus."—*Cic. Epist.* lib. xxiv, ep. 24.—*K.*

[6] *Æson's bath*] See *Ovid. Metam.* lib. vii.—*K.*

SECT. XLIII.—And truly there goes a deal of providence to produce[7] a man's life unto threescore; there is more required than an able temper[8] for those years: though the radical humour contain in it sufficient oil for seventy, yet I perceive in some it gives no light past thirty: men assign not all the causes of long life, that write whole books thereof. They that found themselves on the radical balsam, or vital sulphur of the parts, determine not why Abel lived not so long as Adam. There is therefore a secret gloom or bottom of our days: 't was his wisdom to determine them; but his perpetual and waking providence that fulfils and accomplisheth them; wherein the spirits, ourselves, and all the creatures of God, in a secret and disputed way, do execute his will. Let them not therefore complain of immaturity that die about thirty; they fall but like the whole world, whose solid and well-composed substance must not expect the duration and period of its constitution: when all things are completed in it, its age is accomplished; and the last and general fever may as naturally destroy it before six thousand, as me before forty. There is therefore some other hand that twines the thread of life than that of nature: we are not only ignorant in antipathies and occult qualities; our ends are as obscure as our beginnings; the line of our days is drawn by night, and the various effects therein by a pencil that is invisible; wherein, though we confess our ignorance, I am sure we do not err if we say, it is the hand of God.

SECT. XLIV.—I am much taken with two verses of Lucan, since I have been able not only, as we do at school, to construe, but understand:

> *Victurosque Dei celant ut vivere durent,*
> *Felix esse mori.*[9]
>
> We 're all deluded, vainly searching ways
> To make us happy by the length of days;
> For, cunningly, to make 's protract this breath,
> The Gods conceal the happiness of death.

There be many excellent strains in that poet, wherewith his stoical genius hath liberally supplied him: and truly there are

7 *produce*] In the sense of *extend*.— *Ed.*

8 *temper*] In the sense of *constitution*; see it used with the same import, § 41, "the *temper* of crows and daws."—*Ed.*

9 *Victurosque, etc.*] *Pharsalia*, lib. iv, 519.—*Ed.*

singular pieces in the philosophy[1] of Zeno, and doctrine of the stoics, which I perceive, delivered in a pulpit, pass for current divinity: yet herein are they in extremes, that can allow a man to be his own assassin, and so highly extol the end and suicide of Cato. This is indeed not to fear death, but yet to be afraid of life. It is a brave act of valour to contemn death; but, where life is more terrible than death, it is then the truest valour to dare to live: and herein religion hath taught us a noble example; for all the valiant acts of Curtius, Scævola, or Codrus, do not parallel, or match, that one of Job; and sure there is no torture to the rack of a disease, nor any poniards in death itself, like those in the way or prologue unto it. *Emori nolo, sed me esse mortuum nihil curo;*[2] I would not die, but care not to be dead. Were I of Cæsar's religion, I should be of his desires,[3] and wish rather to go off[4] at one blow, than to be sawed in pieces by the grating torture of a disease.[5] Men that look no further than their outsides, think health an appertenance unto life, and quarrel with their constitutions for being sick; but I, that have examined the parts of man, and know upon what tender filaments that fabrick hangs, do wonder that we are not always so; and, considering the thousand doors that lead to death, do thank my God that we can die but once. 'T is not only the mischief of diseases, and the villainy of poisons, that make an end of us; we vainly accuse the fury of guns, and the new inventions of death:—it is in the power of every hand to destroy us, and we are beholden unto every one we meet, he doth not kill us. There is therefore but one comfort left, that though it be in the power of the weakest arm to take away life, it is not in the strongest to deprive us of death. God would not exempt himself from that; the misery of immortality in the flesh he undertook not,

1 *in the philosophy, &c.*] *Edt.* 1642, *W.* reads, "of the philosophy, &c." *Edt.* 1642, *C.* reads, "of philosophy, &c."—*Ed.*

2 *Emori nolo, &c.*] Referring to a translation in Cicero, of a line in Epicharmus;—

"Emori nolo, sed me esse mortuum nihil æstimo." *Tuscul. Quæst.* l. i.—*Ed.*

3 *Were I of Cæsar's religion, &c.*] Alluding, very probably, to the following passage from Suetonius; "aspernatus tam lentum mortis genus, subitam sibi celeremque optaverat. Et pridie quam occideretur, in sermone nato super cœnam, apud M. Lepidum, quisnam esset finis vitæ commodissimus, repentinum inopinatumque prætulerat." *Sueton. in Vit. J. Cæsar.* 87.—*Ed.*

4 *go off*] *MSS. W. & R.* and *Edts.* 1642 read, "be tortured."—*Ed.*

5 *disease.*] The remainder of the section is wanting in *Edts.* 1642, and all the *MSS.*—*Ed.*

that was in it, immortal.[6] Certainly there is no happiness within this circle of flesh; nor is it in the opticks of these eyes to behold felicity. The first day of our jubilee is death; the devil hath therefore failed of his desires; we are happier with death than we should have been without it: there is no misery but in himself, where there is no end of misery; and so indeed, in his own sense, the Stoic is in the right.[7] He forgets that he can die, who complains of misery: we are in the power of no calamity while death is in our own.[8]

SECT. XLV.—Now, besides this literal and positive kind of death, there are others whereof divines make mention, and those, I think, not merely metaphorical, as mortification, dying unto sin and the world. Therefore, I say, every man hath a double horoscope; one of his humanity,—his birth, another of his christianity,—his baptism: and from this do I compute or calculate my nativity; not reckoning those *horæ combustæ*,* and odd days, or esteeming myself anything, before I was my Saviour's and enrolled in the register of Christ. Whosoever enjoys not this life, I count him but an apparition, though he wear about him the sensible affections of flesh. In these moral acceptions, the way to be immortal is to die daily; nor can I think I have[9] the true theory of death, when I contemplate a skull, or behold a skeleton with those vulgar imaginations it casts upon us.[1] I have therefore enlarged that common *memento mori* into a more christian memorandum, *memento quatuor novissima*,—those four inevitable points of us all, death, judgement, heaven, and hell. Neither did the contemplations of the heathens rest in their graves, without a further thought, of Rhadamanth or some judicial proceeding after death, though in another way, and upon suggestion of their natural reasons. I cannot but marvel from what sibyl or

* That time when the moon is in conjunction, and obscured by the sun, the astrologers call *horæ combustæ*. *MS. W.*—*Ed.*

6 *he undertook not, &c.*] Rather, "he who was in it immortal, undertook not." —*Ed.*

7 *the Stoic is in the right.*] In adopting sentiments like the following:

" —— mors ultima pœna est
Nec metuenda viris.——"

8 *while death is in our own.*] Meaning that death is in our own power, because no one can deprive us of it.—*Ed.*

9 *I have*] All the *MSS.* read, "but that I have."—*Ed.*

1 *imaginations it casts upon us.*] All the *MSS.* and *Edts.* 1642 read, "imaginations cast upon it."—*Ed.*

oracle they stole the prophecy of the world's destruction by fire, or whence Lucan learned to say,

> *Communis mundo superest rogus, ossibus astra*
> *Misturus——*
> There yet remains to th' world one common fire,
> Wherein our bones with stars shall make one pyre.[2]

I believe the world grows near its end; yet is neither old nor decayed, nor will ever perish upon the ruins of its own principles.[3] As the work of creation was above nature, so is its adversary, annihilation; without which the world hath not its end, but its mutation.[4] Now, what force should be able to consume it thus far, without the breath of God, which is the truest consuming flame, my philosophy cannot[5] inform me. Some[6] believe[7] there went not a minute to the world's creation, nor shall there go to its destruction; those six days, so punctually described, make not to them[6] one moment, but rather seem to manifest the method and idea of that great work in[8] the intellect of God than the manner how he proceeded in its operation. I cannot dream that there should be at the last day any such[9] judicial proceeding, or calling to the bar, as indeed the Scripture seems to imply, and the literal commentators do conceive: for unspeakable mysteries in the Scriptures are often delivered in a vulgar and illustrative way, and, being written unto man, are delivered, not as they truly are, but as they may be understood; wherein, notwithstanding, the dif-

2 *whence Lucan learned to say, &c.*] Why, Lucan was a Stoick, and it was an opinion among them, almost generally, that the world should perish by fire;—"Stoicis constans opinio est, quod consumpto humore mundus hic omnis ignescat." *Minutius in Octav.* But Minutius should have excepted Boethius, Possidonius, Diogenes Babylonius, and Zeno Sidonius, who were Stoicks, and yet did not think the world should be destroyed by fire, or yet by any other means.—*K.*

For the passage quoted, see *Pharsalia*, vii, 814.—*Ed.*

3 *nor will ever perish, &c.*] Sir Kenelm Digby attacks this passage, and refers to the arguments and prophecies of Thomas White, respecting the end of the world. But Sir Thomas is only contending that the world will not undergo annihilation, but only mutation;—that it will never *perish*.—*Ed.*

4 *but its mutation.*] These words are in all the *MSS.* but not in *Edts.* 1642.—*Ed.*

5 *cannot*] All the *MSS.* and *Edts.* 1642 read, "can."—*Ed.*

6 *Some . . . . them*] "I . . . me," in all the *MSS.* and *Edts.* 1642.—*Ed.*

7 *Some believe, &c.*] De quo vide *Augustin.* l. 4, *De Genesi ad literam*, a cap. 22, usque ad finem; et *De Civit. Dei*, l. ii, c. 7.—*M.*

8 *that great work in*] I have adopted this reading on the authority of the *MSS.* in opposition to all the editions, which read, "the great work of."—*Ed.*

9 *such*] This word is wanting in all the *MSS.* and *Edts.* 1642.—*Ed.*

ferent interpretations according to different capacities may stand firm with our devotion, nor be any way prejudicial to each single edification.

SECT. XLVI.—Now, to determine the day and year of this inevitable time, is not only convincible and statute madness, but also manifest impiety.[1] How shall we interpret Elias's six thousand years,[2] or imagine the secret communicated to a Rabbi which God hath denied unto his angels? It had been an excellent quære to have posed the devil of Delphos,* and must needs have forced him to some strange amphibology. It hath not only mocked the predictions of sundry astrologers[3] in ages past, but the prophecies[4] of many melancholy heads in these present; who, neither understanding reasonably things past nor present, pretend a knowledge of things to come; heads ordained only to manifest the incredible effects of melancholy, and to fulfil old prophecies,† rather than be the authors of new. "In those days there shall come wars and rumours of wars"[5] to me seems no prophecy, but a constant truth in all times verified since it was pronounced. "There shall be signs in the moon and stars;" how comes he then like a thief in the night, when he gives an item of his coming? That common sign, drawn from the revelation of antichrist, is as obscure as any; in our common compute he hath been come these many years; but, for my own part, to speak freely, [omitting those ridiculous

* The oracle of Apollo.—*MS. W.*

† In those days there shall come liars and false prophets.

1 *Now, to determine, &c.*] Our Saviour's words are, "But of that day and *hour* knoweth no man, no not the angels of heaven." Those writers, therefore, who have undertaken to fix the *year* in which the world is to terminate, probably consider themselves in no degree liable to the charge of impiety; and as little, it may be supposed, to that of "convincible and statute madness!"—*Ed.*

2 *How shall we interpret Elias's six thousand years,*] Vide in Judaico *Thalmude Codice Sanhedrim*, cap. *Chelec;* et *Calixt.* in lib. *de Extremo Judicio*, p. 61. —*M.*

This passage from the Talmud is quoted in *Raymundi Pugione fidei*, pars II, cap. x, § 1, pag. 394, *Edit. Lipsiæ et Francofurt.* 1687; in which no particular Rabbi is named to whom the communication was made, but only, "*Traditum est a domo Eliæ;* (i. e. a discipulis Eliæ;) *per sex millia annorum erit mundus,*" &c; but as the tradition is handed down by the *disciples* of Elias, the probability is, that they believed the prophet was the medium of information.—*J. K.*

3 *sundry astrologers.*] Vide *Richter* in *Ax. Ecclesiast.* Ax. 73, p. 86.—*M.*

4 *prophecies,*] All the *MSS.* and *Edts.* 1642 read, *philosophy.*—*Ed.*

5 *wars and rumours of wars,*] *MS. W.* 2 reads, "liars and false prophets." —*Ed.*

anagrams*] I am half of [Paracelsus's] opinion [and think] that antichrist is[6] the philosopher's stone in divinity, for the discovery and invention whereof, though there be prescribed rules, and probable inductions, yet hath hardly any man[7] attained the perfect discovery thereof. That general opinion, that the world grows near its end, hath possessed all ages past as nearly as ours. I am afraid that the souls that now depart cannot escape that lingering expostulation of the saints under the altar, *quousque, Domine?* how long, O Lord? and groan in the expectation of the great jubilee.

SECT. XLVII.—This is the day that must make good that great attribute of God, his justice;[8] that must reconcile those unanswerable doubts that torment the wisest understandings; and reduce those seeming inequalities and respective distributions in this world, to an equality and recompensive justice in the next. This is that one day, that shall include and comprehend all that went before it; wherein, as in the last scene, all the actors must enter, to complete and make up the catastrophe of this great piece. This is the day whose memory hath, only, power to make us honest in the dark, and to be virtuous without a witness. *Ipsa sui pretium virtus sibi*, that virtue is her own reward, is but a cold principle,[9] and not able to maintain our variable resolutions in a constant and settled way of goodness. I have practised that honest artifice of Seneca,[1] and, in my retired and solitary imaginations,[2] to detain

* Whereby men labour to prove the Pope antichrist, from their name making up the number of the beast. *All the MSS.*

6 *is as obscure, &c.*] This passage is not in *Edts.* 1642, which read, "the revelation of antichrist, the philosopher's stone, &c."—The words between brackets, and the note are from all the *MSS.*—*Ed.*

7 *hardly any man*] All the *MSS.* and *Edts.* 1642 read, "no man."—*Ed.*

8 *God, his justice,*] All the *MSS.* and *Edts.* 1642 read, "God's justice."—*Ed.*

9 *is but a cold principle,*] It is a Stoical principle. "*Pretium sui est.*" *Senec. De Vit. beat.* c. 9.—*K.*

Vide *Cicer. Tusc. Quæst.* l. ii et v; unde *Sil. Italic.* l. xiii, et *Claudian in Cons. Manlium.*—*M.*

1 *that honest artifice of Seneca,*] What that artifice was, is to be seen in *Senec.* l. i, ep. 11. "Aliquis vir bonus nobis eligendus est, et semper ante oculos habendus, ut sic tanquam illo spectante vivamus, et omnia tanquam illo vidente faciamus." Et paulo post; "Elige itaque Catonem; si hic videtur tibi nimis rigidus, elige remissioris animi virum Lelium, &c." which though, as the author saith, it be an honest artifice, yet cannot I but commend the party, and prefer the direction of him (whoever he were) who in the margin of my *Seneca*, over against those words, wrote these: "Quin Deo potius, qui semper omnibus omnia agentibus non tanquam sed re ipsa adest, et videt; ac etiam ut testis, vindex et punitor est male agentis."—*K.*

2 *I have practised, &c.*] *MS. W.* 2

me from the foulness of vice, have fancied to myself the presence of my dear and worthiest friends, before whom I should lose my head rather than be vicious; yet herein I found that there was nought but moral honesty; and this was not to be virtuous for his sake who must reward us at the last.[3] I have tried if I could reach that great resolution of his, to be honest without a thought of heaven or hell; and, indeed, I found, upon a natural inclination, and inbred loyalty unto virtue, that I could serve her without a livery, yet not in that resolved and venerable[4] way, but that the frailty of my nature, upon an easy temptation, might be induced to forget her. The life, therefore, and spirit of all our actions is the resurrection, and a stable apprehension that our ashes shall enjoy the fruit of our[5] pious endeavours; without this, all religion is a fallacy, and those impieties of Lucian, Euripides, and Julian,[6] are no blasphemies, but subtile verities; and atheists have been the only[7] philosophers.

Sect. xlviii.—How shall the dead arise, is no question of my faith; to believe only possibilities is not faith, but mere philosophy. Many things are true in divinity, which are neither inducible by reason nor confirmable by sense; and many things in philosophy confirmable by sense, yet not inducible by reason. Thus it is impossible, by any solid or demonstrative reasons, to persuade a man to believe the conversion of the needle to the north; though this be possible and true, and easily credible, upon a single experiment unto the sense. I believe that our estranged and divided ashes shall unite again; that our separated dust, after so many pilgrimages and transformations into the parts of minerals, plants, animals, elements, shall, at the voice of God, return into their primitive shapes, and join again to make up their primary and predestinate forms. As at the creation[8] there was a separation of that confused mass into its species; so at the destruction thereof there shall be a separation into its distinct individuals. As, at the

reads, "I have practised solitary imaginations,"—*Ed.*

3 *at the last.*] *MS. W.* and *Edts.* 1612, read, "at the last day."—*Ed.*

4 *venerable*] In the sense of *reverential.*—*Ed.*

5 *our*] *MS. W.* 2 reads, *their.*—*Ed.*

6 *Julian,*] *Edts.* 1642, and wanting in all the *MSS.*—*Ed.*

7 *only*] *MSS. W.* 2 & *R.* read, *best.*—*Ed.*

creation] *MS. W.* 2 reads, "creation of the world."—*Ed.*

creation of the world, all the distinct species that we behold lay involved in one mass, till the fruitful voice of God separated this united multitude into its several species, so, at the last day, when those corrupted relicks shall be scattered in the wilderness of forms, and seem to have forgot their proper habits, God, by a powerful voice, shall command them back into their proper shapes, and call them out by their single individuals. Then shall appear the fertility of Adam, and the magick of that sperm that hath dilated into so many millions.[9] I have often beheld, as a miracle, that artificial resurrection and revivification of mercury, how being mortified into a thousand shapes, it assumes again its own, and returns into its numerical self.[1] Let us speak naturally, and like philosophers. The forms of alterable bodies in these sensible corruptions perish not; nor, as we imagine, wholly quit their mansions; but retire and contract themselves into their secret and unaccessible parts; where they may best protect themselves from the action of their antagonist. A plant or vegetable consumed to ashes to a contemplative and school-philosopher seems utterly destroyed, and the form to have taken his leave for ever; but to a sensible[2] artist the forms are not perished, but withdrawn into their incombustible[3] part, where they lie secure from the action of that devouring element. This is made good by experience, which can from the ashes of a plant revive the plant, and from its cinders recall it into its stalk and leaves again.[4]

9 *millions.*] All the *MSS.* and *Edts.* 1642, add the following passage here:

"What is made to be immortal, nature cannot, nor will the voice of God, destroy.

"Those bodies that we behold to perish, were in their created natures immortal, and liable unto death but accidentally, and upon forfeit; and therefore they owe not that natural homage unto death as other bodies do, but may be restored to immortality with a lesser miracle, and by a bare and easy revocation of course return immortal."—*Ed.*

1 *it assumes again, &c.*] Hinc Gregorius Nyssenus putat, si Deus permittat, corporum nostrorum particulas propter mutuum amorem sponte iterum coituras; probat id exemplo *argenti vivi.*—*M.*

2 *sensible*] So in *Edts.* 1642, and *MSS. W.* 2 & *R.*; *MS. W.* reads, *subtile.*—*Ed.*

3 *incombustible*] So in *MS. W.* 2; the *Edts.* 1642 and *MSS. W.* & *R.* read, *combustible.*—*Ed.*

4 *This is, &c.*] All the *MSS.* and *Edts.* 1642, read, "This I make good by experience, and can, &c."

Sir Kenelm Digby, who used the edit. 1642, in which Sir Thomas asserts *himself* to have made good the experiment spoken of, expresses his doubt of its success, "if, under the notion of the same, he comprehendeth all the accidents that first accompanied the plants; &c."

The French Translator makes the following observations on this curious passage. "Jean de Brune raconte, en sa *Pierre à aiguiser les Esprits*, en sa quatrième principale partie de son premier

What the art of man can do in these inferiour pieces, what blasphemy is it to affirm the finger of God cannot do in those more perfect and sensible structures? This is that mystical philosophy, from whence no true scholar becomes an atheist, but from

livre, un exemple semblable à cela, d'un médecin à Krakou, lequel assemble les cendres de toutes sortes de plantes, qui nous sont connues, desquelles il pouvait faire ressusciter derechef la forme des fleurs: et quoi qu'il y ait beaucoup de personnes qui ne le croient pas, ou qui n'y adjoutent pas beaucoup de foi, le dit de Brune dit neanmoins au lieu ci-dessus allegué ces choses, *à present ce secret n'est pas si rare; car plusieurs savants chimistes nous en font voir tous les jours des preuves:* ce lieu mérite bien d'être lu."—*Fr. Tr.*

"De quo, tamen," says Moltke, "dubito. Vidi Romæ apud P. Athanasium Kircherum ejusmodi plantam (ut ille referebat, si bene memini) e cineribus resuscitatam. Puto herbas, ex quibus illa fuit, non fuisse combustas, aut in cineres redactas, sed solum exsiccatas, et in pulverem redactas. Ejusmodi aliquid fieri posse ex urticis et aliis non est dubium. Percepi postea dictum Patrem Adiantos sive capillos veneris, partim in cineres redegisse, partim e cineribus sal fecisse, partim e capillis illis aquam distillasse, et postea omnia illa in phiala longa ac ventrem habente miscuisse, collum vitri hermetice clausisse, et collocasse in loco temperato: exindeque novam resurrexisse plantam, lubenter id experientia explorassem, sed satis capillorum invenire hic haud potui. Amicus quidem meus voluit id ex urticis comperire, sed nihil exinde resurrexit. Habeo adhuc alia secreta quæ docent quomodo ex contusis et putrefactis seminibus nova possit resuscitari planta, sed an præstent ea quæ promittunt, nondum hactenus probavi."—*M.*

In the Correspondence of Sir Thomas Browne will be found a letter addressed to him by Dr. Henry Power, intreating "an experimental eviction" of "so high and noble a piece of chymistry, viz. the re-individuality of an incinerated plant." And among Dr. P's papers in the British Museum, (*MSS. Sloan.* 1334, f. 33) is preserved, under the head of "Experiments and Subtilties," the following;

"*An admirable secret of representing the very forme of plants by their ashes philosophically prepared. Spoken of by Quercetanus* [Joseph Duchesne] *and Angelus Salæ.*

"Take (saith hee) the salt, both the fixed and the volatile also. Take the very spirit and the phlegme of any herbe, but let them all bee rightly prepared; dissolve them and coagulate them, upon which if you put the water stilled from May-dew, or else the proper water of the hearb you would have appeare; close them all very well in a glasse for the purpose, and by the heate of embers or the naturall heate of ones body, at the bottome of the glasse, the very forme and idæa thereof will be represented; which will suddenly vanish away, the heate being withdrawn from the bottome of the glasse."

We cannot refrain from giving a passage on this subject from *D'Israeli's Curiosities of Literature.*

"Never was a philosophical imagination more beautiful than that exquisite *Palingenesis*, as it has been termed from the Greek, or a regeneration; or rather, the apparitions of animals and plants. Schott, Kircher, Gaffarel, Borelli, Digby, and the whole of that admirable school, discovered in the ashes of plants their primitive forms, which were again raised up by the force of heat. Nothing, they say, perishes in nature; all is but a continuation, or a revival. The semina of resurrection are concealed in extinct bodies, as in the blood of man; the ashes of roses will again revive into roses, though smaller and paler than if they had been planted: unsubstantial and unodoriferous, they are not roses which grew on rose-trees, but their delicate apparitions; and, like apparitions, they are seen but for a moment! The process of the *Palingenesis*, this picture of immortality, is described. These philosophers having burnt a flower, by calcination disengaged the salts from its ashes, and deposited them in a glass phial; a chemical mixture acted on it, till in the fermentation they assumed a bluish and spectral hue. This dust, thus excited by heat, shoots upwards into its primitive forms; by smpathy the parts unite, and while each is returning to its destined place, we see distinctly the stalk, the leaves,

the visible effects of nature grows up a real divine, and beholds not in a dream, as Ezekiel, but in an ocular and visible object, the types of his resurrection.

SECT. XLIX.—Now, the necessary[5] mansions of our restored selves are those two contrary and incompatible places we call heaven and hell. To define them, or strictly to determine what and where these are, surpasseth my divinity. That elegant[6] apostle, which seemed to have a glimpse of heaven, hath left but a negative description thereof; which neither eye hath seen, nor ear hath heard, nor can enter into the heart of man: he was translated out of himself to behold it; but, being returned into himself, could not express it. Saint John's description by emeralds, chrysolites, and precious stones, is too weak to express the material heaven we behold. Briefly therefore, where the soul hath the full measure and complement of happiness; where the boundless appetite of that spirit remains completely satisfied that it can neither desire addition nor alteration; that, I think, is truly heaven: and this can only be in the enjoyment of that essence, whose infinite goodness is able to terminate the desires of itself, and the unsatiable wishes of ours.[7] Wherever God will thus manifest himself, there is heaven, though within the circle of this sensible world. Thus, the soul[8] of man may be in heaven any where, even within the limits of his own proper body; and when it ceaseth to live in the body, it may remain in its own soul, that is, its Creator. And thus we may say that Saint

and the flower, arise: it is the pale spectre of a flower coming slowly forth from its ashes. The heat passes away, the magical scene declines, till the whole matter again precipitates itself into the chaos at the bottom. This vegetable phœnix lies thus concealed in its cold ashes, till the presence of heat produced this resurrection—as in its absence it returns to its death."

The following experiment by Sir Thomas Browne, preserved in his hand-writing in the British Museum, will throw light on the real character of these supposed vegetable resurrections.

"The water distilled out of the *roote* of *bryonia alba*, mixed with *sal nitri*, will send forth handsome shootes. Butt the neatest draughts are made in the sand or scurvie grasse water, if you make a thin solution therein of *sal amoniac*, and so lett it exhale; for at the bottom will remain woods and rowes of filicular shaped plants, in an exquisite and subtle way of draught, much answering the figures in the stones from the East Indies" *MSS. Sloan.* 1847.—*Ed.*

5 *necessary*] In the sense of *inevitable*. —*Ed.*

"Death, a necessary end,
"Will come, when it will come." *Shaksp.*

6 *elegant*] Merryweather reads, *eloquentissimus*, and the Fr. Translator after him renders it, "le plus eloquent."—*Ed.*

7 *ours.*] i. e. *ourselves.*—*Ed.*

8 *soul*] So all the *MSS.*; the *Edts.* 1642 read, *sense.*—*Ed.*

Paul, whether in the body or out of the body, was yet in heaven. To place it in the empyreal, or beyond the tenth sphere, is to forget the world's destruction; for when this sensible world shall be destroyed, all[9] shall then be here as it is now there, an empyreal heaven, a *quasi* vacuity; when[1] to ask where heaven is, is to demand where the presence of God is, or where we have the glory of that happy vision. Moses, that was bred up in all the learning of the Egyptians, committed a gross absurdity in philosophy, when with these eyes of flesh he desired to see God, and petitioned his Maker, that is truth itself, to a contradiction. Those that imagine heaven and hell neighbours, and conceive a vicinity between those two extremes, upon consequence of the parable, where Dives discoursed with Lazarus in Abraham's bosom, do too grossly conceive of those glorified creatures, whose eyes shall easily out-see the sun, and behold without perspective the extremest distances: for if there shall be, in our glorified eyes, the faculty of sight and reception of objects, I could think the visible species there to be in as unlimitable[2] a way as now the intellectual. I grant that two bodies placed beyond the tenth sphere, or in a vacuity, according to Aristotle's philosophy, could not behold each other, because there wants a body or medium to hand[3] and transport the visible rays of the object unto the sense; but when there shall be a general defect of either medium to convey, or light to prepare and dispose that medium, and yet a perfect vision, we must suspend the rules of our philosophy, and make all good by a more absolute piece of opticks.

Sect. L.—I cannot tell how to say that fire is the essence of hell; I know not what to make of purgatory, or conceive a flame that can either prey upon, or[4] purify the substance of a soul.[5] Those flames of sulphur, mentioned in the scriptures,

9 *all*] So *MSS. W.* 2 *& R.*; *MS. W.* and *Edts.* 1642 read, *and.*—*Ed.*

1 *when*] *MSS. W.* 2 *& R.* read, *then.*—*Ed.*

2 *unlimitable*] *MS R.* reads, *limitable.*—*Ed.*

3 *hand*] The *Edts.* 1642 read, *have.*—*Ed.*

4 *either prey upon, or*] *MSS. W. & R.* read, "neither prey upon, nor."—*Ed.*

5 *or conceive a flame, &c.*] Upon this ground Psellus (l. i, *De Energia Dæmonum*, c. 7,) holds that angels have bodies (though he grants them to be as pure or more pure than air is), otherwise he could not apprehend how they should be tormented in hell.—*K.*

I take not to be understood of this present hell, but of that to come, where fire shall make up the complement of our tortures, and have a body or subject whereon to manifest its tyranny. Some who have had the honour to be textuary in divinity are of opinion it shall be the same specifical fire with ours. This is hard to conceive, yet can I make good how even that may prey upon our bodies, and yet not consume us: for in this material world, there are bodies that persist invincible in the powerfulest flames; and though, by the action of fire, they fall into ignition and liquation, yet will they never suffer a destruction. I would gladly know how Moses, with an actual fire, calcined or burnt the golden calf into powder: for that mystical metal of gold, whose solary and celestial nature I admire,[6] exposed unto the violence of fire, grows only hot, and liquefies, but consumeth not; so when the consumable and volatile pieces of our bodies shall be refined into a more impregnable and fixed temper, like gold, though they suffer from the action of flames, they shall never perish, but lie immortal in the arms of fire. And surely, if this frame must suffer only by the action of this element, there will many bodies escape; and not only heaven, but earth will not be at an end, but rather a beginning. For at present it is not earth, but a composition of fire, water, earth, and air; but at that time, spoiled of these ingredients, it shall appear in a substance more like itself, its ashes. Philosophers that opinioned the world's destruction by fire, did never dream of annihilation, which is beyond the power of sublunary causes; for the last and proper[7] action of that element is but vitrification, or a reduction of a body into glass; and therefore some of our chymicks facetiously affirm,[8] that, at the last fire, all shall be crystalized and reverberated into glass, which is the utmost action of that element. Nor need we fear this term, annihilation, or wonder that God will destroy the works of his creation: for man subsisting, who is, and will then truly appear, a microcosm, the world cannot be said to be destroyed. For the eyes of

6 *admire,*] All the *MSS.* and *Edts.* 1642 read, *adore.—Ed.*

7 *proper*] *MS. W.* 2 reads, *powerfulest.—Ed.*

8 *affirm,*] In all the *MSS.* and *Edts.* 1642, the following clause is here added, "yea, and urge Scripture for it." *—Ed.*

God, and perhaps also of our glorified selves,[9] shall as really behold and contemplate the world, in its epitome or contracted essence, as now it doth at large and in its dilated substance. In the seed of a plant, to the eyes of God, and to the understanding of man, though in an invisible way,[1] there exist the perfect leaves, flowers, and fruit thereof; for things that are in *posse* to the sense, are actually existent to the understanding. Thus God beholds all things, who contemplates as fully his works in their epitome as in their full volume, and beheld as amply the whole world, in that little compendium of the sixth day,[2] as in the scattered and dilated pieces of those five before.

Sect. li.—Men commonly set forth the torments of hell by fire,[3] and the extremity of corporal afflictions, and describe hell in the same method that Mahomet doth heaven. This indeed makes a noise, and drums in popular ears: but if this be the terrible piece thereof, it is not worthy to stand in diameter with heaven, whose happiness consists in that part that is best able to comprehend it, that immortal essence, that translated divinity and colony[4] of God, the soul.[5] Surely, though we place hell under earth, the devil's walk and purlieu is about it. Men speak too popularly who place it in those flaming mountains,

9 *selves,*] *MSS. W. 2 & R.* read, *senses.—Ed.*

1 *though in an invisible way, &c.*] "Mon fidèle ami, cet esprit bien exercé, qu'on fait l'auteur de l'*Interest de la Hollande*, étant en mon jardin, sut bien me dire, avec de bonnes raisons, qu'on pouvoit voir auparavant dans le cœur de l'oignon, quelle fleur il en proviendroit: il parloit pour lors des tulipes. J. R."—*Fr. Tr.*

2 *little compendium of the sixth day,*] i. e. man.—*M.*

3 *Men commonly set forth the torments of hell by fire,*] That the punishments of the next world are to consist of material fire, is a position which is ably controverted by the learned protestant Saurin in one of his Discourses translated by Robert Robinson. The Holy Scriptures no more unfold to us the precise nature of the punishments, which we may in the next world expect for our offences in this world, than they reveal to us what will be the precise nature of the happiness of the righteous in the next life. Our limited understandings may be as incapable of comprehending the one as the other: it is sufficient for the purposes of human life that we are as well assured of the one as the other. If the joys of heaven are described as "an exceeding weight of glory," an immortal crown, as recumbency in "Abraham's bosom," and singing hallelujahs by the side of the Lamb, the language is as metaphorical as when the pains of hell are said to consist of "a worm that never dieth," a "fire that is never quenched," a "burning lake," a bottomless pit, and similar expressions. If the torment were a "worm," it could not be a fire, or lake, or pit; and if we are compelled to admit the figurative language in the one case, we need not hesitate to apply the same mode of interpretation to the other.—*E. H. B.*

4 *and colony*] In the *MSS. W. & R.* there is a blank in place of these words, which are wanting in *Edts.* 1642.—*Ed.*

5 *the soul.*] The remainder of the section is wanting in all the *MSS.* and *Edts.* 1642.—*Ed.*

which to grosser apprehensions represent hell.[6] The heart of man is the place the devils dwell in; I feel sometimes a hell within myself; Lucifer keeps his court in my breast; Legion is revived in me. There are as many hells as Anaxagoras conceited worlds.[7] There was more than one hell in Magdalene, when there were seven devils; for every devil is an hell unto himself;[8] he holds enough of torture in his own *ubi;* and needs not the misery of circumference to afflict him: and thus, a distracted conscience here is a shadow or introduction unto hell hereafter. Who can but pity the merciful intention of those hands that do destroy themselves? The devil, were it in his power, would do the like; which being impossible, his miseries are endless, and he suffers most in that attribute wherein he is impassible, his immortality.

SECT. LII.—I thank God, and with joy I mention it, I was never afraid of hell, nor ever grew pale at the description of that place. I have so fixed my contemplations on heaven, that I have almost forgot the idea of hell; and am afraid rather to lose the joys of the one, than endure the misery of the other: to be deprived of them is a perfect hell, and needs methinks no addition to complete our afflictions. That terrible term hath never detained me from sin, nor do I owe any good action to the name thereof. I fear God, yet am not afraid of him; his mercies make me ashamed of my sins, before his judgments afraid thereof: these are the forced and secondary method of his wisdom, which he useth but as the last remedy, and upon provocation;—a course rather to deter[9] the wicked, than incite the virtuous to his worship. I can hardly think there was ever any scared into heaven: they go the fairest[1] way to heaven that would serve God without a

[6] *flaming mountains, &c.*] Ætna and Vesuvius; which in the popular superstition of the country have been supposed the mouths of hell. *Ed.* 1736.

[7] *There are as many hells, &c.*] I assure myself that this is false printed, and that instead of Anaxagoras it should be Anaxarchus; for Anaxagoras is reckoned amongst those philosophers that maintained the unity of the world, but Anaxarchus (according to the opinion of Epicurus) held there were infinite worlds. This is he that caused Alexander to weep by telling him there were infinite worlds; whereby Alexander it seems was brought out of opinion of his geography, who before that time thought there remained nothing, or not much, beyond his conquests.—*K.*

[8] *for every devil is an hell unto himself;*] So Milton in *Paradise Lost*, i, 254.

The mind is its own place, and in itself
Can make a heaven of hell, a hell of heaven.
E. H. B.

[9] *deter*] *MSS. W. & R.* and *Edts.* 1642 read, *detain.*—*Ed.*

[1] *fairest*] *MSS. W.* 2 *& R.* read, *surest.*—*Ed.*

hell: other mercenaries, that crouch unto him in fear of hell, though they term themselves the servants, are indeed but the slaves, of the Almighty.

Sect. liii.—And to be true, and speak my soul, when I survey the occurrences of my life, and call into account the finger of God, I can perceive nothing but an abyss and mass of mercies, either in general to mankind, or in particular to myself. And, whether out of the prejudice of my affection, or an inverting and[2] partial conceit of his mercies, I know not,—but those which others term crosses, afflictions, judgements, misfortunes, to me, who inquire further into them than their visible effects, they both appear, and in event[3] have ever proved, the secret and dissembled favours of his affection. It is a singular piece of wisdom to apprehend truly, and without passion, the works of God, and so well to distinguish his justice from his mercy as not miscall those noble attributes; yet it is likewise an honest piece of logick so to dispute and argue the proceedings of God as to distinguish even his judgements into mercies. For God is merciful unto all, because better to the worst than the best deserve;[4] and to say he punisheth none in this world, though it be a paradox, is no absurdity. To one that hath committed murder, if the judge should only ordain a fine, it were a madness to call this a punishment, and to repine at the sentence, rather than admire the clemency of the judge. Thus, our offences being mortal, and deserving not only death but damnation, if the goodness of God be content to traverse and pass them over with a loss, misfortune, or disease; what frenzy were it to term this a punishment, rather than an extremity of mercy, and to groan under the rod of his judgements rather than admire the sceptre of his mercies! Therefore to adore, honour, and admire him, is a debt of gratitude due from the obligation of our nature, states, and conditions: and with these thoughts He that knows them best will not deny that I adore him. That I obtain heaven, and the bliss thereof, is accidental, and not the in-

[2] *inverting and*] These words are not in *MS. R.—Ed.*

[3] *event*] *MS. W. & Edts.* 1642 read, *effect.—Ed.*

[4] *because better to, &c.*] *MSS. W. & R.* and *Edts.* 1642 read, "because to the worst that the best deserve." In *MS. W.* 2, is a blank in place of the passage.—*Ed.*

tended work of my devotion; it being a felicity I can neither think to deserve nor scarce in modesty to expect. For these two ends of us all, either as rewards or punishments, are mercifully ordained and disproportionably disposed unto our actions; the one being so far beyond our deserts, the other so infinitely below our demerits.

SECT. LIV.—There is no salvation to those that believe not in Christ; that is, say some, since his nativity, and, as divinity affirmeth, before also; which makes me much apprehend the end of those honest worthies and philosophers which died before his incarnation. It is hard to place those souls in hell, whose worthy lives[5] do teach us virtue on earth. Methinks, amongst those many subdivisions of hell, there might have been one limbo left for these. What a strange vision will it be to see their poetical fictions converted into verities, and their imagined and fancied furies into real devils! How strange to them will sound the history of Adam, when they shall suffer for him they never heard of! When they, [that] derive[6] their genealogy from the gods, shall know they are the unhappy issue of sinful man! It is an insolent part of reason, to controvert the works of God, or question the justice of his proceedings. Could humility teach others, as it hath instructed me, to contemplate the infinite and incomprehensible distance betwixt the Creator and the creature; or did we seriously perpend that one simile[7] of St. Paul, "shall the vessel say to the potter, why hast thou made me thus?" it would prevent these arrogant disputes of reason; nor would we argue the definitive sentence of God, either to heaven or hell. Men that live according to the right rule and law of reason, live but in their own kind, as beasts do in theirs; who justly obey the prescript of their natures, and therefore cannot reasonably demand a reward of their actions, as only obeying the natural dictates of their reason. It will, therefore, and must, at last appear, that all salvation is through Christ; which

5 *whose worthy lives do*] All the *MSS.* and *Edts.* 1642 read, "whose life doth."—*Ed.*

6 *when they* [*that*] *derive*] *That* is inserted on the authority of all the *MSS.* and *Edts.* 1642. *Ed.* 1643 reads, "when they derive;" and this evidently erroneous reading is followed in most of the Editions; some insert, *who.*—*Ed.*

7 *simile*] *MS. W.* and *Edts.* 1642 read, *principle.*—*Ed.*

verity, I fear, these great examples of virtue must confirm, and make it good how the perfectest actions of earth have no title or claim unto Heaven.[8]

8 *There is no salvation, &c.*] On the interesting question discussed in this section, viz. "what will be the future state of those who have died in ignorance of the christian dispensation?"—the first chapter of Mr. Gurney's *Observations on the Religious Peculiarities of the Society of Friends* contains so interesting a train of argument, that we shall without hesitation make the following extracts:—

"Let us in the first place endeavour to form some estimate of the breadth of that foundation in religion, on which we are standing in common with mankind in general. God is the Creator and merciful Father of us all. Christ died for us all. A measure of the influence of the Holy Spirit enlightens and, if obeyed, would save us all. Upon these successive positions I will venture to offer a few remarks.

"The attributes of God, as the Creator and Father of all mankind, were admirably unfolded by the apostle Paul, in his address to the philosophical Athenians; Acts xvii. 24—28." "Let it not be imagined that God is the merciful Father of all mankind, *only* inasmuch as he makes his rain to fall, and his sun to shine for them all, and bestows upon them all a variety of outward and temporal benefits. The Scriptures plainly declare that he wills for them a happiness of a far more exalted and enduring nature. Fallen and corrupt as they are, and separated by their iniquities from the Holy One of Israel, 'he willeth not that any should perish, but that *all* should come to repentance;' 2 Pet. iii, 9." "He who offers deliverance to all men, has appointed for all men a way of escape. 'God sent not his Son into the world to condemn the world; but that *the world* through him might be saved;' John iii, 17."

"This observation naturally leads to my second proposition, that Christ died for *all*—a proposition in order to the proof of which I need do nothing more than simply cite the explicit declarations, on this subject, of inspired writers; 1 John ii, 1, 2; 1 Tim. ii, 5, 6; Heb. ii, 9; Rom. v. 18—21. The complete parallelism observed in this last passage between the effects of Adam's transgression on the one part, and those of the righteousness of Christ on the other, appears to afford a plain and satisfactory evidence for the truth of the doctrine of universal redemption. The two things are described as being in their operation upon mankind absolutely co-extensive; and as it is true, without limit or exception, that all men are exposed to death through the sin of Adam, so it is true, without limit or exception, that all men may obtain eternal life through the righteousness of Christ."

"As men participate in the disease arising from the sin of Adam who are totally ignorant of its original cause, so, we may with reason infer, that men may also participate in the remedy arising from the obedience of Christ who have received no outward revelation whatever respecting that obedience."

"What was the remark suggested by the case of Cornelius to the apostle Peter? 'Of a truth I perceive,' said he, 'that God is no respecter of persons; *but in every nation, he that feareth him and worketh righteousness is accepted with him;* ver. 34, 35. When the apostle used these words, the truth which he contemplated appears to have been this: that amongst the nations of the Gentile world, ignorant as they generally were, both of the institutions of the Jews and of the offices of the Messiah, there were individuals who, like Cornelius, feared God and worked righteousness—who had experienced, THEREFORE, in some degree, the sanctifying influence of the Holy Spirit—and that such individuals were accepted by the Father of mercies, who is no respecter of persons." "And such also we may believe to have been the happy experience of all those Gentiles whom the apostle was considering, who might be so influenced by the power of the Lord's Spirit, as to *live in the fear of God, and to work righteousness.* That this was, to a great extent, the character of some of the most virtuous of the ancient Gentile philosophers, their recorded sentiments and known history afford us strong reasons to believe: and that it was the character also of many besides them, who were destitute of an outward revelation, we may learn without difficulty from the apostle Paul; Rom. ii, 13—15.

"As the Gentiles to whom the apostle was here alluding were, according to their measure of light, sanctified through

SECT. LV.—Nor truly do I think the lives of these, or of any other, were ever correspondent, or in all points conformable, unto their doctrines. It is evident that Aristotle transgressed the rule of his own ethicks;[9] the Stoicks, that con-

the Spirit, and when sanctified accepted; so I think every christian must allow that they were accepted not because of their own righteousness, but through the merits and mediation of the Son of God. Now the benefit of those merits and that mediation, is offered according to the declarations of Scripture, only to those who believe; for "without faith it is impossible to please God." The doctrine that we are justified by faith, and that without faith none can obtain salvation, is to be freely admitted as a doctrine revealed to mankind on the authority of God himself. Let it, however, be carefully kept in view, that God is *equal*. It is unquestionably true in great as well as in little things, that "if there be first a willing mind, it is accepted according to that a man hath, and not according to that he hath not;" 2 Cor. viii, 12. The extent of faith required in man in order that he may be accepted with the supreme Being, will ever be proportioned to the extent of light communicated. Those to whom the merits and mediation of the Son of God are made known, are undoubtedly required to believe in the merits and mediation of the Son of God. Those from whom the plan of redemption is concealed, and to whom the Deity is made manifest only by his outward works, and by his law written on the heart, may nevertheless so believe in God, that it shall be counted to them "for righteousness."

"The reader will observe that I have already deduced the universality of saving light from the declarations of Scripture, that God's tender mercies are over *all* his works, and that Christ died for *all* men. The most plausible objection to this inference, arises from the notion, so prevalent amongst some christians, that the Spirit of God operates on the heart of man *only* in connexion with the outward knowledge of the Scriptures and of Christ, and that consequently such outward knowledge is indispensable to salvation. Having, therefore, endeavoured to remove this objection, and to shew on apostolic authority, that there were individuals in the Gentile world who had no acquaintance with the truths of religion as they are revealed in the Holy Scriptures, but who were nevertheless enabled to fear God and work righteousness, I consider there is nothing in the way to prevent our coming to a sound conclusion, that, as, on the one hand, God is merciful to *all* men, and Christ is a sacrifice for *all* men; so, on the other hand, *all* men have received *a measure* of that spiritual influence, through which alone they can permanently enjoy the mercy of God, or participate in the benefits of the death of Christ."—*Ed.*

[9] *It is evident that Aristotle, &c.*] And so they did all, as Lactantius hath observed at large. Aristotle is said to have been guilty of great vanity in his clothes, of incontinency, of unfaithfulness to his master Alexander, &c. But 't is no wonder in him, if our great Seneca be also guilty, whom truly notwithstanding St. Jerome would have inserted into the catalogue of saints, yet I think he as little deserved it, as many of the heathens who did not say so well as he did; for I do not think any of them lived worse. To trace him a little.—In the time of the Emperour Claudius we find he was banished for suspicion of incontinency with Julia the daughter of Germanicus. To look upon him in his exile, we find that then he wrote his epistle De Consolatione to Polybius, Claudius's creature, and therein he extols him and the emperour to the skies; in which he did grossly prevaricate, and lost much of his reputation, by seeking a discharge of his exile by so sordid a means. Upon Claudius's marriage with Agrippina, he was recalled from banishment by her means, and made prætor; then he forgets the emperour, having no need of him, labours all he can to depress him, and the hopeful Britannicus, and procured his pupil Nero to be adopted and designed successor, and the emperour's own son to be disinherited; and against the emperour, whom he so much praised when he had need of him, after his death he writes a scurrilous libel. In Nero's court, how ungratefully doth he behave himself towards Agrippina! who although she were a wicked woman, yet she deserved well of him, and of her son too, who yet never was at rest till he had taken away her life, and upon suspicion cast in against her by this man. After-

demn passion, and command a man to laugh in Phalaris's bull, could not endure without a groan a fit of the stone or colick. The scepticks, that affirmed they knew nothing,[1] even in that opinion confute themselves, and thought they knew more than all the world beside. Diogenes I hold to be the most vainglorious man of his time, and more ambitious in refusing all honours, than Alexander in rejecting none. Vice and the devil put a fallacy upon our reasons; and, provoking us too hastily to run from it, entangle and profound us deeper in it. The duke of Venice, that [yearly] weds himself unto the sea, by [casting thereinto] a ring of gold,[2] I will not accuse of prodigality, because it is a solemnity of good use and consequence in the state: but the philosopher, that threw his money into the sea to avoid avarice, was a notorious prodigal.[3] There is no road or ready way to virtue; it is not an easy point of art to disentangle ourselves from this riddle, or web of sin. To perfect virtue, as to religion, there is required a *panoplia*, or complete armour; that whilst we lie at close ward[4] against

wards, not to mention that he made great haste to grow rich, which should not be the business of a philosopher, how well did it become his philosophy to play the traitor against Nero himself, and to become an accomplice in the conspiracy of Piso?—Now let any man judge what a precious legacy it is that he bequeathes by his nuncupative will to his friends, in Tacitus. "Conversus ad amicos (saith he) quando meritis eorum referre gratiam prohiberetur, quod unum jam tamen et pulcherrimum habebat, imaginem vitæ suæ relinquere testatur." It cannot be denied of him, that he hath said very well; but yet it must as well be affirmed, that his practice hath run counter to his theory, to use the author's phrase.—*K.*

1 *The scepticks, &c.*] Their maxim was, "Nihil sciri siquis putat, id quoque nescit. An sciri possit, quod se nil scire tatetur."—*K.*

2 [*yearly*] *weds himself, &c.*] The words between brackets are from all the *MSS.* and *Edts.* 1642.

Towards the close of the thirteenth century, the Venetians compelled the neighbouring states to acknowledge their right of sovereignty over the Adriatick Sea;—a right which they have since contended was confirmed to them by Pope Alexander III, in his celebrated declaration to their Doge: "Que la mer vous soit soumise comme l'épouse l'est à son époux, puisque vous en avez acquis l'empire par la victoire." It was in commemoration of this event that the annual ceremony here alluded to was established.—*Ed.*

The Duke and Senate yearly, on Ascension-day, used to go in their best attire to the haven at Lio, and there, by throwing a ring into the water, do take the sea as their spouse. Vid. *Hist. Ital.* by W. Thomas, Cambro-Brit. Busbequius reports that there is a custom amongst the Turks, which they took from the Greek priests, not much unlike unto this. "Cum Græcorum sacerdotibus mos sit certo veris tempore aquas consecrando mare clausum veluti referare, ante quod tempus non facile se committunt fluctibus; ab ea ceremonia nec Turcæ absunt." *Busb.* ep. 3, *Legat. Turcic.*—*K.*

3 *But the philosopher, &c.*] This was Apollonius Thyaneus, who threw a great quantity of gold into the sea with these words, "Pessundo divitias, ne pessunder ab illis." Polycrates, the tyrant of Samos, cast the best jewel he had into the sea, that thereby he might learn to compose himself against the vicissitudes of fortune.—*K.*

4 *at close ward*] *MSS. W.* 2 *& R.* read, "at a close guard."—*Ed.*

one vice, we lie not open to the veney[5] of another. And indeed wiser discretions, that have the thread of reason to conduct them, offend without a pardon; whereas under[6] heads may stumble without dishonour. There go so many circumstances to piece up one good action, that it is a lesson to be good, and we are forced to be virtuous by the book. Again, the practice of men holds not an equal pace, yea and often runs counter to their theory; we naturally know what is good, but naturally pursue what is evil: the rhetorick wherewith I persuade another cannot persuade myself. There is a depraved appetite in us, that will with patience hear the learned instructions of reason, but yet perform no further than agrees to its own irregular humour. In brief, we all are monsters; that is, a composition of man and beast: wherein we must endeavour to be as the poets fancy that wise man, Chiron; that is, to have the region of man above that of beast, and sense to sit but at the feet of reason. Lastly, I do desire with God that all, but yet affirm with men that few, shall know salvation,—that the bridge is narrow, the passage strait unto life: yet those who do confine the church of God either to particular nations, churches, or families, have made it far narrower than our Saviour ever meant it.

Sect. lvi.[7]—The vulgarity of those judgements that wrap the church of God in Strabo's cloak,[8] and restrain it unto Europe, seem to me as bad geographers as Alexander, who thought he had conquered all the world, when he had not subdued the half of any part thereof. For we cannot deny the church of God both in Asia and Africa, if we do not forget the peregrinations of the apostles, the deaths of the martyrs, the sessions of many and (even in our reformed judgement)

[5] *veney*] Or *venew*;—the technical term used by fencers for a *hit*. See *Love's Labour's Lost*, act v, scene 1.—*Ed.*

[6] *under*] Used adjectively, in the sense of *inferiour*.—*Ed.*

[7] *Sect.* LVI.] This section is not in any of the *MSS.*, nor in *Edts.* 1642. —*Ed.*

[8] *Strabo's cloak*,] 'T is *Strabonis tunica* in the translation, but *chlamydi* would do better, which is the proper expression of the word that Strabo useth: it is not Europe, but the known part of the world that Strabo resembleth to a cloak, and that is it the author here alludeth to; but we have no reason to think that the resemblance of Strabo is very proper: Vid. *Sir Hen. Savil, in not. ad Tac. in vita Agricolæ*.—*K.*

The passage alluded to, in which Strabo compares the exterior configuration of the then known habitable world to that of a cloak, is to be found, lib. ii, c. 5, tom. i, p. 315, in ed. *Siebenkees*.—*Ed.*

lawful councils, held in those parts in the minority and nonage of ours. Nor must a few differences, more remarkable in the eyes of man than, perhaps, in the judgement of God, excommunicate from heaven one another; much less those Christians who are in a manner all martyrs, maintaining their faith in the noble way of persecution, and serving God in the fire, whereas we honour him but in the sunshine.

'T is true, we all hold there is a number of elect, and many to be saved; yet, take our opinions together, and from the confusion thereof, there will be no such thing as salvation, nor shall any one be saved: for, first, the church of Rome condemneth us; we likewise them; the sub-reformists and sectaries sentence the doctrine of our church as damnable; the atomist, or familist,[9] reprobates all these; and all these, them again. Thus, whilst the mercies of God do promise us heaven, our conceits and opinions exclude us from that place. There must be therefore more than one St. Peter; particular churches and sects usurp the gates of heaven, and turn the key against each other; and thus we go to heaven against each other's wills, conceits, and opinions, and, with as much uncharity as ignorance, do err, I fear, in points not only of our own, but one another's salvation.[1]

[9] *the atomist, or familist,*] Of this class of religionists, for we suspect the two names refer to but one sect, Neal gives the following account. "About this time, (1575) began to appear the *family of love*, which derived its pedigree from one Henry Nicholas, a Dutchman. By their confession of faith published this year, it appears that they were high enthusiasts; that they allegorized the doctrines of revelation, and, under a pretence of attaining to spiritual perfection, adopted some odd and whimsical opinions, &c." *Hist. of the Puritans*, i, 273.—*Ed.*

[1] *The whole section.*] The spirit of charity which pervades this section is truly characteristick of its author, and harmonizes perfectly with his reluctance to suppose, that those virtuous heathens, who lived and died in ignorance of the Redeemer, will therefore be excluded from all participation in the benefits of his atonement. We were tempted (p. 78) to compare with those feelings the opinions of an admirable modern writer on the same subject:—and we shall repeat the parallel,—persuaded that in comparing with the present section, Mr. Gurney's delightful concluding reflexions, our readers will readily perceive that similarity of feeling has produced similarity of opinion. In both, it is "the charity that hopeth all things, that thinketh no evil." "Such, according to my apprehension of scriptural truth, are the religious advantages which may be deemed the common allotment of mankind in general. God is their equal judge, and compassionate Father: the Son of God, when clothed with humanity, gave his life a ransom for them all: and lastly, through the operation of his Holy Spirit, a moral sense of right and wrong, accompanied with a portion of quickening and redeeming power, is implanted in them universally. Here, then, we may perceive grounds of union and brotherly kindness co-extensive with the whole world; and whilst we cultivate a sense of these animating truths, we shall be

SECT. LVII.—I believe many are saved who to man seem reprobated, and many are reprobated who in the opinion and sentence of man stand elected. There will appear, at the last day, strange and unexpected examples, both of his justice and his mercy; and, therefore, to define either is folly in man, and insolency even in the devils. Those acute and subtile spirits, in all their sagacity, can hardly[2] divine who shall be saved; which if they could prognostick, their labour were at an end, nor need they compass the earth, seeking whom they may devour. Those who, upon a rigid application of the law, sentence Solomon unto damnation,[3] condemn not only him, but themselves, and the whole world; for, by the letter and written word of God, we are without exception in the state of death: but there is a prerogative of God, and an arbitrary pleasure above the letter of his own law, by which alone we can pretend unto salvation, and through which Solomon might be as easily saved as those who condemn him.

SECT. LVIII.—The number of those who pretend unto salvation, and those infinite swarms who think to pass through the eye of this needle, have much amazed me. That name and compellation of "little flock" doth not comfort, but deject, my devotion; especially when I reflect upon mine own unworthiness, wherein, according to my humble apprehensions, I am below them all. I believe there shall never be an anarchy in heaven; but, as there are hierarchies amongst the angels, so shall there be degrees of priority amongst the saints. Yet is it, I protest, beyond my ambition to aspire unto the first ranks; my desires only are, and I shall be happy therein, to be but the last man, and bring up the rear in heaven.

SECT. LIX.—Again, I am confident, and fully persuaded, yet dare not take my oath, of my salvation. I am, as it were, sure, and do believe without all doubt, that there is such a

disposed neither to think too highly of ourselves, nor to despise others. On the contrary, a feeling of true charity towards our neighbour, of whatever colour or country, will spread in our hearts; and a lively disposition will arise in us to labour for the happiness of that universal family, who not only owe their existence to the same Creator, but are the common objects of his paternal regard and of his redeeming love." *Gurney's Observations, &c.* p. 19.—*Ed.*

2 *can hardly*] All the *MSS.* and *Edts.* 1642, read, *cannot.*—*Ed.*

3 *Those who, upon a rigid application, &c.*] St. Augustine, upon Psalm cxxvi, and in many other places, holds that Solomon is damned; of the same opinion is Lyra, in 2 *Reg.* c. 7, and *Bellarm.* tom. 1, lib. i, *Controv.* c. 5.—*K.*

city as Constantinople; yet, for me to take my oath thereon were a kind of perjury, because I hold no infallible warrant from my own sense to confirm me in the certainty thereof. And truly, though many pretend to[4] an absolute certainty of their salvation, yet, when an humble soul shall contemplate her own unworthiness, she shall meet with many doubts, and suddenly find how little[5] we stand in need of the precept of St. Paul, "work out your salvation *with fear and trembling*." That which is the cause of my election, I hold to be the cause of my salvation, which was the mercy and *beneplacit* of God, before I was, or the foundation of the world. "Before Abraham was, I am," is the saying of Christ, yet is it true in some sense[6] if I say it of myself; for I was not only before myself but Adam, that is, in the idea of God, and the decree of that synod held from all eternity. And in this sense, I say, the world was before the creation, and at an end before it had a beginning. And thus was I dead before I was alive; though my grave be England, my dying place was Paradise; and Eve miscarried of me, before she conceived of Cain.[7]

SECT. LX.—Insolent zeals, that do decry good works and rely only upon faith, take not away merit: for, depending upon the efficacy of their faith, they enforce the condition of God, and in a more sophistical[8] way do seem to challenge heaven. It was decreed by God that only those that lapped in the water, like dogs, should have the honour to destroy the Midianites; yet could none of those justly challenge, or imagine he deserved, that honour thereupon. I do not deny but that true faith, and such as God requires, is not only a mark or token, but also a means, of our salvation; but, where to find this, is as obscure to me as my last end. And if our Saviour could object,[9] unto his own disciples and favourites, a faith that, to

4 *pretend to*] *MS. W.* 2 reads, *believe.* —*Ed.*

5 *little*] *Edts.* 1642 read, *much;* and the French and Dutch translations follow this reading. All the *MSS.* and the English and Latin editions read, *little;* which, though it presents a less obvious meaning, was probably intended by the author, who meant to observe that it is impossible for "a humble soul to contemplate her own unworthiness," *without* "fear and trembling;" so that St. Paul needed not to have enjoined those feelings.—*Ed.*

6 *in some sense*] Omitted in all the *MSS.* and *Edts.* 1642 —*Ed.*

7 *And thus, &c.*] This clause is not in the *MSS.*, nor *Edts.* 1642.—*Ed.*

8 *sophistical*] *MSS. R.* reads, *syllogistical.*—*Ed.*

9 *object,*] This seems to be used in the sense of *presenting or proposing as an object.*—*Ed.*

the quantity of a grain of mustard seed, is able to remove mountains; surely that which we boast of is not any thing, or, at the most, but a remove from nothing.

This is the tenour of my belief; wherein, though there be many things singular, and to the humour of my irregular self, yet, if they square not with maturer judgements, I disclaim them, and do no further favour[1] them than the learned and best judgements shall authorize them.

PART THE SECOND.

SECT. I.—Now, for that other virtue of charity, without which faith is a mere notion and of no existence, I have ever endeavoured to nourish the merciful disposition and humane inclination I borrowed from my parents, and regulate it to the written and[2] prescribed laws of charity. And, if I hold the true anatomy of myself, I am delineated and naturally framed to such a piece of virtue,[3]—for I am of a constitution so general that it consorts and sympathizeth with all things; I have no antipathy, or rather idiosyncrasy, in diet, humour, air, any thing. I wonder not at the French for their dishes of frogs, snails, and toadstools, nor at the Jews for locusts and grasshoppers;[4] but, being amongst them, make them my common viands; and I find they agree with my stomach as well as theirs. I could digest a salad gathered in a church-yard as well as in a garden. I cannot start at the presence[5] of a serpent, scorpion, lizard, or salamander; at the sight of a toad

[1] *favour*] All the *MSS.* and *Edts.* 1642 read, *father.—Ed.*

[2] *written and*] Not in *MSS.* or *Edts.* 1642.—*Ed.*

[3] *of virtue,*] Not in *MS. R.—Ed.*

[4] *the Jews for locusts and grasshoppers;*] Pliny relates that, in some parts of Ethiopia, the inhabitants lived upon nothing but locusts salted, and that the Parthians also accounted them a pleasant article of food. The modern Arabs catch great quantities of locusts, of which they prepare a dish by boiling them with salt, and mixing a little oil, butter, and fat; sometimes they toast them before a fire, or soak them in warm water, and without any other culinary process, devour almost every part except the wings. They are also said to be sometimes pickled in vinegar. The locusts which formed part of John the Baptist's food (Mark i, 6,) were these insects, and not the fruit of the locust tree. *T. H. Horne's Introduction, &c.* iii, p. 71.—*Ed.*

[5] *presence*] *Edt.* 1642 *C.* reads, *present.—Ed.*

or viper, I find in me no desire to take up a stone to destroy them. I feel not in myself those common antipathies that I can discover in others: those national repugnances[6] do not touch me, nor do I behold with prejudice the French,[7] Italian, Spaniard, or Dutch; but, where I find their actions in balance with my countrymen's, I honour, love, and embrace them, in some degree. I was born in the eighth climate, but seem to be framed[8] and constellated unto all. I am no plant that will not prosper out of a garden. All places, all airs,[9] make unto me one country; I am in England every where, and under any meridian. I have been shipwrecked, yet am not enemy with the sea or winds;[1] I can study, play, or sleep, in a tempest. In brief I am averse from nothing:[2] my conscience would give me the lie if I should say I absolutely detest or hate any essence, but the devil; or so at least abhor any thing, but that we might come to composition.[3] If there be any among those common objects of hatred I do contemn and laugh at, it is that great enemy[4] of reason, virtue, and religion, the multitude; that numerous piece of monstrosity, which, taken asunder, seem men, and[5] the reasonable creatures of God, but, confused together, make but one great beast, and a monstrosity more prodigious than Hydra. It is no breach of charity to call these fools; it is the style all holy writers have afforded them, set down by Solomon in canonical[6] scripture, and a point of our faith to believe so. Neither in the name of multitude do I only include the base and minor sort of people:

6 *national repugnances*] Sic Angli in publicis plateis Londini non abstinent prætereuntem more gallico vestitum appellare *Frenche Dogge*. Odium inter Hispanos ac Gallos, inter Schotos atque Anglos, inter Danos ac Suecos, inter Turcas atque Ungaros notum est.—*M.*

7 *French,*] *MS. W. & Edts.* 1642 read, *Flemish.—Ed.*

8 *seem to be framed*] *MSS. W. & R.* and *Edts.* 1642 read, *seemed forty be-framed; Edt.* 1643 reads, *seem for to be framed.—Ed.*

9 *airs,*] *Edts.* 1642 read, *ages.—Ed.*

1 *yet am not enemy with the sea or winds;*] So said not Cato!—whose three causes of regret are thus enumerated by Plutarch:—1. if he had intrusted a woman with a secret:—2. *if he had gone by sea when he might have travelled on land:*—3. if he had passed a day without transacting any business of importance.—*M.*

2 *nothing:*] All the *MSS.* and *Edts.* 1642 read, "nothing, neither plant, animal, nor spirit."—*Ed.*

3 *hate any essence, but the devil, &c.*] All the *MSS.* and *Edts.* 1642 read, "hate the devil; or so at least abhor him but that we may come to composition."—*Ed.*

4 *enemy*] All the *MSS.* and *Edts.* 1642 read, *inquiry.—Ed.*

5 *men, and*] Not in *MS. W.* and the *Edts.* 1642.—*Ed.*

6 *canonical*] *MS. W.* and *Edts.* 1642 read, *holy.—Ed.*

there is a rabble even amongst the gentry;[7] a sort of plebeian heads, whose fancy moves with the same wheel as those; men in the same level with mechanicks, though their fortunes do somewhat gild their infirmities, and their purses compound for their follies.[8] But, as in casting account three or four men together come short in account of one man placed by himself below them, so neither are a troop of these ignorant Doradoes[9] of that true esteem and value as many a forlorn person, whose condition doth place him[1] below their feet. Let us speak like politicians; there is a nobility without heraldry, a natural dignity, whereby one man is ranked with another, another[c] filed before him, according to the quality of his desert, and preeminence of his good parts. Though the corruption of these times, and the bias of present practice, wheel another way, thus it was in the first and primitive commonwealths, and is yet in the integrity and cradle of well ordered polities:[3] till corruption getteth ground;—ruder desires labouring after that which wiser considerations contemn;—every one having a liberty to amass and heap up riches, and they a licence or faculty to do or purchase any thing.

SECT. II.—This general and indifferent temper of mine doth more nearly dispose me to this noble virtue. It is a happiness to be born and framed unto virtue, and to grow up from the seeds of nature, rather than the inoculations and forced grafts

7 *a rabble even amongst the gentry;*] Optime Socrates dixit: "Neque frumentum optimum judicamus, quod in pulcherrimo agro natum est, sed quod commode nutrit, neque virum bonum et studiosum, aut amicum benevolum, qui genere clarus, sed qui moribus egregiis fuerit. Vid. *Stobæum serm.* 84, *ex vers. Gesner.*—*M.*

8 *their fortunes do somewhat gild, &c.*] "Et genus et formam regina pecunia donat." *Hor. Epist.* l. i. 6.—*M.*

9 *Doradoes*] From the Spanish, *Dorado*, a gilt-head, gilt-poll.—*J. W.*

The epithet is evidently in allusion to the preceding sentence: "Though their fortunes do somewhat *gild* their infirmities, &c."—*Ed.*

Diogenes, qui ne pouvait souffrir ces gens-là devant ses yeux, voyant une fois un de ces fanfarons, ou de ces galands, avec un habit tout chamarré d'or et d'argent, et se moquant de lui à gorge déployée, dit à ceux qui étoient à l'entour de lui, "et je vous prie voyez un peu cette masse de terre dorée, qui a eté cuite au soleil."—*Fr. Tr.*

1 *him*] So in *Edts.* 1642 and 1686—all the *MSS.* and all the other *Edts.* read, *them.*—*Ed.*

2 *another*] All the *MSS.* and *Edts.* 1642 read, and.—*Ed.*

3 *in the* integrity *and* cradle *of well ordered polities:*] "In those well ordered polities whose *entireness* was yet *unbroken*, and their *freshness unimpaired.*" Sir Thomas uses *integrity* in the same sense in the following passage;—"who go with healthful prayers unto the last scene of their lives, and in the *integrity* of their faculties return their spirit unto God that gave it." *Christian Morals* p. i, § 4.—*Ed.*

of education: yet, if we are directed only by our particular natures, and regulate our inclinations by no higher rule than that of our reasons, we are but moralists; divinity will still call us heathens. Therefore this great work of charity must have other motives, ends, and impulsions. I give no alms to satisfy the hunger of my brother, but to fulfil and accomplish the will and command of my God; I draw not my purse for his sake that demands it, but his that enjoined it; I relieve no man upon the rhetorick of his miseries, nor to content mine own commiserating disposition; for this is still but moral charity, and an act that oweth more to passion[4] than reason. He that relieves another upon the bare suggestion and bowels of pity doth not this so much for his sake as for his own: for by compassion we make another's misery our own; and so, by relieving them, we relieve ourselves also. It is as erroneous a conceit to redress other men's misfortunes upon the common considerations of merciful natures, that it may be one day our own case; for this is a sinister and politick kind of charity, whereby we seem to bespeak the pities of men in the like occasions. And truly I have observed that those professed eleemosynaries, though in a crowd or multitude, do yet direct and[5] place their petitions on a few and selected persons; there is surely a physiognomy, which those experienced and master mendicants observe, whereby they instantly discover a merciful aspect, and will single out a face, wherein they spy the signatures and marks of mercy. For there are mystically in our faces certain characters which carry in them the motto of our souls, wherein he that can[6] read A B C may read our natures. I hold, moreover, that there is a phytognomy, or physiognomy, not only of men, but of plants and vegetables; and in every one of them some outward figures which hang as signs or bushes of their inward forms.[7] The finger of God hath left an

[4] *passion*] In the sense of *suffering*,—*sympathy*.—*Ed.*

[5] *direct and*] Omitted in all the *MSS.* and *Edts.* 1642.—*Ed.*

[6] *can*] *MSS. W. & R.* read, *cannot*.—*Ed.*

[7] *hang as signs or* bushes, *&c.*] In the epilogue to Shakspeare's *As you like it*, occurs the following passage:—

"If it be true that *good wine needs no bush*, 't is true that a good play needs no epilogue, &c."

To which passage we find in Boswell's Edition of *Malone's Shakspeare* the following note:

"It appears formerly to have been the custom to hang a *tuft of ivy* at the door of a vintner. I suppose *ivy* was rather chosen than any other plant, as it has

inscription upon all his works, not graphical, or composed of letters, but of their several forms, constitutions, parts, and operations, which, aptly joined together, do make one word that doth express their natures. By these letters God calls the stars by their names; and by this alphabet Adam assigned to every creature a name peculiar to its nature. Now, there are, besides these characters in our faces, certain mystical figures in our hands, which I dare not call mere dashes, strokes *à la volée*[8] or at random, because delineated by a pencil that never works in vain; and hereof I take more particular notice, because I carry that in mine own hand which I could never read of nor discover in another. Aristotle, I confess, in his acute and singular book of physiognomy, hath made no mention[9] of chiromancy:[1] yet I believe the Egyptians, who were nearer[2] addicted to those abstruse and mystical sciences, had a knowledge therein; to which those vagabond and counterfeit Egyptians did after[3] pretend, and perhaps retained a few corrupted principles, which sometimes might verify their prognosticks.

It is the common wonder of all men, how, among so many millions of faces, there should be none alike: now, contrary, I wonder as much how there should be any. He that shall consider how many thousand several words have been carelessly and without study composed out of twenty-four letters; withal, how many hundred lines there are to be drawn in the fabrick of one man; shall easily find that this variety is necessary: and it will be very hard that they shall so concur as to

relation to Bacchus. So, in *Gascoigne's Glass of Government*, 1575:

"Now a dayes the good wyne needeth *none ivye garland.*"

Again, in *The Rival Friends*, 1632:

"'Tis like the *ivy-bush* unto a tavern."

Again, in *Summer's Last Will and Testament*, 1600:

"Green *ivy-bushes* at the vintner's doors." STEEVENS.

The practice is still observed in Warwickshire and the adjoining counties, at statute-hirings, wakes, &c. by people who sell ale at no other time. And hence, I suppose, the *Bush* tavern at Bristol, and other places. RITSON.—*Ed.*

8 à la volée] So all the *MSS.*: but *Edts.* 1642 read, *a Lavole!*—*Ed.*

9 *hath made no mention*] *Edts.* 1642 read, "hath made mention."—*Ed.*

1 *chiromancy:*] That Sir Thos. Browne had no disinclination to listen to the marvellous must be allowed; but, from the brief and guarded mention of Chiromancy in his *Vulgar Errors*, it may perhaps be inferred that his attachment to that sublime science did not subsequently increase. See *Vulgar Errors*, book v, c. 23. —*Ed.*

2 *nearer*] *Edt.* 1642 *W.* reads, *never. Edt.* 1642 *C.* reads, *ever.*—*Ed.*

3 *did after*] All the *MSS.* and *Edts.* 1642 read, *do yet.*—*Ed.*

make one portrait like another. Let a painter carelessly limn out a million of faces, and you shall find them all different; yea, let him have his copy before him, yet, after all his art, there will remain a sensible distinction: for the pattern or example of every thing is the perfectest in that kind,[4] whereof we still come short, though we transcend or go beyond it; because herein it is wide, and agrees not in all points unto its copy. Nor doth the similitude of creatures disparage the variety of nature, nor any way confound the works of God. For even in things alike there is diversity; and those that do seem to accord do manifestly disagree. And thus is man like God; for, in the same things that we resemble him we are utterly different from him. There was never any thing so like another as in all points to concur; there will ever some reserved difference slip in, to prevent the identity; without which two several things would not be alike, but the same, which is impossible.

Sect. iii.—But, to return from philosophy to charity, I hold not so narrow a conceit of this virtue as to conceive, that to give alms is only to be charitable, or think a piece of liberality can comprehend the total of charity. Divinity hath wisely divided the act thereof into many branches, and hath taught us, in this narrow way, many paths unto goodness; as many ways as we may do good, so many ways we may be charitable. There are infirmities not only of body, but of soul and fortunes, which do require the merciful hand of our abilities. I cannot contemn a man for ignorance, but behold him with as much pity as I do Lazarus. It is no greater charity to clothe his body than apparel the nakedness of his soul. It is an honourable object to see the reasons of other men wear our liveries, and their borrowed understandings do homage to the bounty of ours. It is the cheapest way of beneficence, and, like the natural charity of the sun, illuminates another without obscuring itself. To be reserved and caitiff[5] in this

4 *Let a painter carelessly limn, &c.*] *MS. W.* and *Edts.* 1642 read, "Let a painter carefully limbe out a million of faces, and you shall find them all different, and after all his art there will remain a sensible distinction from the pattern of every thing in the perfectest of that kind."

All the *MSS.* and *Editions* erroneously read, *limb*, or *limbe*, for *limn.*—*Ed.*

5 *and caitiff*] Omitted in all the *MSS.* and *Edts.* 1642.—*Ed.*

The restricted sense of *niggardly*, in which this word must be here understood, can scarcely be supported by the authority of other writers. It is a sense which neither attaches to *chetif* nor to *cattivo*

part of goodness is the sordidest piece of covetousness, and more contemptible than the pecuniary avarice. To this (as calling myself a scholar) I am obliged by the duty of my condition. I make not therefore my head a grave, but a treasury[6] of knowledge. I intend no monopoly, but a community in learning. I study not for my own sake only, but for theirs that study not for themselves. I envy no man that knows more than myself, but pity them that know less. I instruct no man as an exercise of my knowledge, or with an intent rather to nourish and keep it alive in mine own head than beget and propagate it in his. And, in the midst of all my endeavours, there is but one thought that dejects me, that my acquired parts must perish with myself, nor can be legacied among my honoured friends. I cannot fall out [with] or condemn a man for an errour, or conceive why a difference in opinion should divide an affection;[7] for controversies, disputes, and argumentations, both in philosophy and in divinity, if they meet with discreet and peaceable natures, do not infringe the laws of charity. In all disputes, so much as there is of passion, so much there is of nothing to the purpose; for then reason, like a bad hound, spends upon a false scent, and forsakes the question first started. And this is one reason why controversies are never determined; for, though they be amply proposed, they are scarce at all handled; they do so swell[8] with unnecessary digressions; and the parenthesis on the party is often as large as the main discourse upon the subject. The foundations of religion are already established, and the principles of salvation subscribed unto by all. There remain[9] not many controversies worthy a passion, and yet never any dispute it without, not only in divinity but inferiour arts. What a βατραχομυομαχία and hot skirmish is betwixt S. and T. in Lucian![1] How do grammarians hack and slash for the genitive

the French and Italian originals of the word. Might it, in Sir Thomas's days, be used provincially in that sense? *Stingy* in Norfolk means *illnatured*; in Johnson it means *covetous*.—*Ed.*

6 *treasury*] So all the *MSS.* and *Edts.* 1642—this reading has been followed by the Latin and French translators, and we venture to adopt it, in opposition to all other *Edts.* which read *treasure*.—*Ed.*

7 *an affection;*] All the *MSS.* and *Edts.* 1642 read, *our affections*.—*Ed.*

8 *swell*] All the *MSS.* and *Edts.* 1642 read, *wander*.—*Ed.*

9 *there remain, &c.*] All the *MSS.* and *Edts.* 1642 read, "there remains not one controversy worth a passion."—*Ed.*

1 *hot skirmish is betwixt S. and T. in Lucian*] In his *Dialog. judicium vocalium*, where there is a large oration made to

case* in Jupiter![2] How do they break their own pates, to salve that of Priscian![3] *Si foret in terris, rideret Democritus.* Yea, even amongst wiser militants, how many wounds have been given and credits slain,[4] for the poor victory of an opinion, or beggarly conquest of a distinction! Scholars are men of peace, they bear no arms, but their tongues are sharper than Actius's razor;[5] their pens carry further, and give a louder report than thunder.[6] I had rather stand in the shock[7] of a basilisk[8] than in

* Whether Jovis or Jupitris.

the vowels, being judges, by *sigma* against *tau*, complaining that *tau* has bereaved him of many words, which should begin with *sigma.*—*K.*

2 *Jupiter!*] All the *MSS.* and *Edts.* 1642 add here the following sentence; "How many synods have been assembled and angrily broke up about a line in *propria quæ maribus!*"—*Ed.*

3 *How do they break their own pates, &c.*] "Franciscus Philelphus Grammaticæ regulas, quas in magno habebat pretio, strictim observandas voluit. Accidit autem, ut cum Græco quodam, cujus nomen Timotheus erat, disputaret de quadam syllaba: uterque vero in eo conveniebat, ut is, cujus rationes solido fundamento niterentur, alterius barbam avellere deberet. Philelphus hac pugna superior discedebat, et offerebat Timotheus, barbæ loco, pecuniæ summam, ut ei parceret, quam vero alter repudiabat, etiamsi paupertas eum undique premebat, et barbam, virile illud ornamentum, conditione simul inita, ei abscindebat: vide quæ Paulus Jovius in *Elog.* c. 17, et Trithemius *de Scriptt. Eccl.* ac Baylius in *Dictionario Hist.* ea de re referunt." D. Fr. Jani *de Doctoribus Umbraticis, eorumque Variis Incommodis in Republica Literaria Commentarius, Vitembergæ*, 1720, p. 18.

"I am sensible how unjustly the very best classical criticks have been treated. It is said, that our greatest philosopher spoke with much contempt of the two finest scholars of this age, Dr. Bentley and Bishop Hare, for squabbling, as he expressed it, about an old play-book; meaning I suppose, Terence's comedies. But this story is unworthy of him; though well enough suiting the fanatick turn of the wild writer that relates it; such censures are amongst the follies of men immoderately given over to one science, and ignorantly undervaluing all the rest. Those learned criticks might, and perhaps did, laugh in their turn (though still, sure, with the same indecency and indiscretion,) at that incomparable man, for wearing out a long life in poring through a telescope. Indeed, the weaknesses of such are to be mentioned with reverence. But who can bear, without indignation, the fashionable cant of every trifling writer, whose insipidity passes, with himself, for politeness, for pretending to be shocked, forsooth, with the rude and savage air of *vulgar* criticks; meaning such as Muretus, Scaliger, Casaubon, Salmasius, Spanheim, Bentley! When, had it not been for the deathless labours of such as these, the western world, at the revival of letters, had soon fallen back again into a state of ignorance and barbarity, as deplorable as that from which Providence had just redeemed it.

To conclude with an observation of a fine writer and great philosopher of our own; which I would gladly bind, though with all honour, as a phylactery, on the brow of every awful grammarian, to teach him at once the use and limits of his art: "Words are the money of fools, and the counters of wise men." *Warburton's Preface to Shakspeare.*—*E. H. B.*

4 *slain,*] All the *MSS.* read *stained; Edts.* 1642 read, *shamed.*—*Ed.*

5 *Actius's razor;*] Accius Nævius, the chief augur, who is reported by Livy, Florus, &c. to have cut a whetstone through with a razor, at the challenge of the King, Tarquinius Priscus.—*Ed.*

6 *Yea, even amongst wiser militants, &c.*] Very amusing illustration of these passages may be found in M. D'Israeli's chapter on "Literary Controversy," in *Curiosities of Literature*, vol. ii, p. 259,—and in his chapter on "Confusion of Words," in the *Second Series*, vol, ii, p. 1.—*Ed.*

the fury of a merciless pen. It is not mere zeal to learning, or devotion to the muses, that wiser princes patron the arts, and carry an indulgent aspect unto scholars; but a desire to have their names eternized by the memory of their writings, and a fear of the revengeful pen of succeeding ages: for these are the men that, when they have played their parts, and had their *exits*, must step out and give the moral of their scenes, and deliver unto posterity an inventory of their virtues and vices. And surely there goes a great deal of conscience to the compiling of an history: there is no reproach to the scandal of a story; it is such an authentick kind of falsehood, that with authority belies our good names to all nations and posterity.

SECT. IV.—There is another offence unto charity, which no author hath ever written of, and few take notice of, and that's the reproach, not of whole professions, mysteries, and conditions, but of whole nations, wherein by opprobrious epithets we miscal each other, and, by an uncharitable logick, from a disposition in a few, conclude a habit in all.

Le mutin Anglois, et le bravache Escossois;[9]
Le bougre Italien, et le fol François;
Le poltron Romain, le larron de Gascogne,
L'Espagnol superbe, et l'Alleman yvrogne.

[7] *shock*] All the *MSS.* and *Edts.* 1642 read, *stroke.—Ed.*

[8] *basilisk*] The *MSS.* and all the *Editions* read, *basilisco.—Ed.*

Defined by Johnson to be "A kind of serpent, called also a cockatrice, which is said to drive away all others by his hissing, and to kill by looking."

Shakspeare alludes to this animal in the following lines:—

"Make me not sighted like the *basilisk;*
I've look'd on thousands who have sped the better
By my regard, but kill'd none so."

Sir Thomas devotes a chapter to the basilisk in his *Vulgar Errors,* b. iii, c. 7, whence Dr. Johnson has quoted the following description of it:—

"The *basilisk* was a serpent not above three palms long, and differenced from other serpents by advancing his head, and some white marks or coronary spots upon the crown."

It will however be seen that there is some doubt of the accuracy of this description.—*Ed.*

[9] *Le mutin Anglois, &c.*] "The following character of the principal nations of Europe was written about the middle of the last century by Mr. Mozer, who was envoy from the elector Palatine to Hanover. Though it may appear somewhat tinctured with prejudice, and time may have made some alterations, yet the moral and political features of each country are pretty correctly drawn, and may be recognized as portraits at the present day.

"ENGLAND.—The domain of liberty and property; the country of extremes. Virtue is here divine—vice infernal. Here are liberty of conscience, political liberty, civil liberty, commercial liberty, liberty of thought, tongue, and pen, to and beyond the limits of the most profligate licence; newspapers, magazines, pamphlets, registers; turfs, cockpits, clubs, maccaronies, blackguards, stocks, lotteries, schemes, lame ducks, clever fellows, humour, and Novembers big with suicide; post chaises, Italian music and pictures, but few with ears or eyes; the nest of foreigners; the country of Shakspeare, Newton, and Hogarth.

St. Paul, that calls the Cretians liars, doth it but indirectly, and upon quotation of their own poet.[1] It is as bloody a thought in one way as Nero's was in another.[2] For by a word we wound a thousand, and at one blow assassin the honour of a nation. It is as complete a piece of madness to miscal and rave against the times; or think to recall men to reason

"FRANCE.—The country of CITOYENS and MODE. Here things are estimated by their air. A watch may be a masterpiece without exactness, and a woman rule the town without beauty, if they have air. Here life 's a dance; and awkwardness of step its great disgrace. Character here is dissolved into the public, and an original a name of mirth. '*Cela se fait, et cela ne se fait pas,*' are here the supreme umpires of conduct. Their religion is superstition, fashion, sophism. The ladies lay on rouge in equilateral squares, and powder with brick-dust. Tyranny may grind the face, but not the countenance of a Frenchman: his feet are made to dance in wooden-shoes. The parliament resembles an old toothless mastiff. France was the country of Le Sueur and Racine, and is that of Voltaire.

"SPAIN.—The dregs of a nation two centuries past the arbiters of Europe, and leaders of discovery. Still sense, sagacity, and cool courage, are tamely submitted here to the iron yoke of the inquisition; and each note of humanity drowned in the yells of Dominic's victims. The prerogatives of society moulder here in provincial archives: these are the execrable lords of one hemisphere, and the humble factors of Europe. To see a sceptre in the gripe of women. Confessors and favourites make no characteristic of Spain; nor is the country of Calderon and Cervantes, more than its neighbours, the land of ignorance, vanity, indolence, poverty, envy.

"PORTUGAL.—Something of literature and history, glare, gallantry, superstition, earthquakes, daggers, inquisition; the bloody dawns of an uncertain day; the country of Camoens.

"GERMANY.—Its heroes, like Italian pictures, shew best at a distance. The rest parcel out to deserts, petty tyrants, priests, pedigreed beggars, and pedants; and all her neighbours know Germany. Yet this is the mother of Arminius and Frederic, of Leibnitz and Wolfe, of Handel and Graun, of Mengs and Donner, of Winkelman and Reimarus.

"RUSSIA.—The motley creation of Peter, called the Great. Imitators of all Europe, but not Russians: a country taught to rear the produce of southern climates to vapid life, and to neglect its own vigorous offspring. History, mathematics, geography, a general balance of trade, inhuman intrepidity, slavery, savage glare of wealth.

"HOLLAND.—A country, through all its ages, fertile of patriots, though now plethoric with wealth, and unstrung by public indolence. A nobility once full of republican metal, sneaking by degrees into courtiers. Here are scholars, civilians, laborious triflers, trade. Here absence of misery is happiness; indifference, contentment; profit, honour. Here sentiment is nonsense; plain sense, wit; jollity, pleasure; possession, enjoyment; money the anchor of minds, the gale of passions, the port of life.

"SWITZERLAND.—The land of liberty. Trade, taste, knowledge, discovery, among the Protestants, vigour in all; despisers of death; slaves of money abroad. Abroad, a contemptible swarm of valets, clerks, officers, artists, schemers; the leeches of fools." *Collet's Relics of Literature.—Ed.*

1 *of their own poet.*] The passage alluded to is Titus i, 12;—in which St. Paul quotes a line from Epimenides, an epic poet of Crete, contemporary with Solon. His work on oracles and responses, mentioned by St. Jerome, is said to have supplied the quotation.—*Ed.*

2 *as Nero's was in another.*] Alluding, as Keck supposes, to a brutal reply of Nero's, just before he burnt Rome, related by Suetonius,—*Vit. Neron.* § 38. The succeeding sentence, however, leads to a suspicion that Sir Thomas had confounded Nero with Caligula, and was thinking of the wish of this emperor, "that the people of Rome had but one neck, that he might destroy them all *at a blow.*"—*Ed.*

by a fit of passion. Democritus, that thought to laugh the times into goodness, seems to me as deeply hypochondriack as Heraclitus, that bewailed them. It moves not my spleen to behold the multitude in their proper humours; that is, in their fits of folly and madness, as well understanding that wisdom is not profaned[3] unto the world; and it is the privilege of a few to be virtuous. They that endeavour to abolish vice destroy also virtue; for contraries, though they destroy one another, are yet in life of one another. Thus virtue (abolish vice) is an idea. Again, the community of sin doth not disparage goodness; for, when vice gains upon the major part, virtue, in whom it remains, becomes more excellent, and, being lost in some, multiplies its goodness in others, which remain untouched, and persist entire in the general inundation. I can therefore behold vice without a satire, content only with an admonition, or instructive reprehension; for noble natures, and such as are capable of goodness, are railed into vice, that might as easily be admonished into virtue; and we should be all so far the orators of goodness as to protect her from the power of vice, and maintain the cause of injured truth.[4] No man can justly censure or condemn another; because, indeed, no man truly knows another. This I perceive in myself; for I am in the dark to all the world, and my nearest friends behold me but in a cloud. Those that know me but superficially think less of me than I do of myself; those of my near acquaintance think more; God who truly knows me, knows that I am nothing: for he only beholds me, and all the world, who looks not on us through a derived[5] ray, or a trajection[6] of a sensible species, but beholds the substance without the help of accidents, and the forms of things, as we their operations. Further, no man can judge another, because no man knows himself; for we censure others but as they disagree from that

3 *profaned*] *Edts.* 1642 read, *common.*—*Ed.*

4 *are railed into vice, &c.*] All the *MSS.* and *Edts.* 1642 read, "are not railed into vice, and maintain the cause of injured truth."—*Ed.*

5 *derived*] *MS. W.* and *Edts.* 1642 read, *divided.*—*Ed.*

6 *or a trajection of a sensible species,*] That is, "God looks on the substance itself, not on a visible or sensible representation emitted or *trajected* by that substance."

Trajection, in the sense of *emission*, is quoted by Dr. Johnson from the *Vulgar Errors*, in the following passage:

"The *trajections* of such an object more sharply pierce the martyred soul of John, than afterwards did the nails the crucified body of Peter." *V. E.* b. 7, c. 10.—*Ed.*

humour which we fancy laudable in ourselves, and commend others but for that wherein they seem to quadrate and consent with us. So that in conclusion, all is but that we all condemn, self-love. 'T is the general complaint of these times, and perhaps of those past, that charity grows cold; which I perceive most verified in those which most do manifest[7] the fires and flames of zeal; for it is a virtue that best agrees with coldest natures, and such as are complexioned for humility. But how shall we expect charity towards others, when we are uncharitable to ourselves? "Charity begins at home," is the voice of the world; yet is every man his greatest enemy, and as it were, his own executioner. *Non occides*, is the commandment of God, yet scarce observed by any man; for I perceive every man is his own Atropos, and lends a hand to cut the thread of his own days. Cain was not therefore the first murderer, but Adam, who brought in death; whereof he beheld the practice and example in his own son Abel; and saw that verified in the experience of another which faith could not persuade him in the theory of himself.

SECT. v.—There is, I think,[8] no man that apprehendeth his own miseries less than myself; and no man that so nearly apprehends another's. I could lose an arm without a tear, and with few groans, methinks, be quartered into pieces; yet can I weep most seriously at a play, and receive with a true passion the counterfeit griefs of those known and professed impostures. It is a barbarous part of inhumanity to add unto any afflicted parties misery, or endeavour to multiply in any man a passion whose single nature is already above his patience. This was the greatest affliction of Job, and those oblique expostulations of his friends a deeper injury than the downright blows of the devil. It is not the tears of our own eyes only, but of our friends also, that do exhaust the current of our sorrows; which, falling into many streams, runs more peaceably, and is contented with a narrower channel. It is an act within the power of charity, to translate a passion out of one breast into another, and to divide a sorrow almost out of itself; for an affliction, like a dimension, may be so divided as,

[7] *manifest*] *MS. W.* and *Edts.* 1642 read, *magnify.—Ed.*

[8] *I think*,] Not in the *MSS.* and *Edts.* 1642.—*Ed.*

if not indivisible, at least to become insensible. Now with my friend I desire not to share or participate, but to engross, his sorrows; that, by making them mine own, I may more easily discuss them: for in mine own reason, and within myself, I can command that which I cannot entreat without myself, and within the circle of another. I have often thought those noble pairs[9] and examples of friendship, not so truly histories of what had been, as fictions of what should be; but I now perceive nothing in them but possibilities, nor any thing in the heroick examples of Damon and Pythias, Achilles and Patroclus, which, methinks, upon some grounds,[1] I could not perform within the narrow compass of myself. That a man should lay down his life for his friend seems strange to vulgar affections and such as confine themselves within that worldly principle, "charity begins at home." For mine own part, I could never remember the relations that I held unto myself, nor the respect that I owe unto my own nature, in the cause of God, my country, and my friends.[2] Next to these three, I do embrace myself. I confess I do not observe that

[9] *pairs*] *MSS. W.* 2, and *R.* read, *patterns.—Ed.*

[1] *methinks, upon some grounds,*] These words are not in the *MSS.* and *Edts.* 1642.—*Ed.*

[2] *For mine own part, I could never remember the relations &c.*] The philosopher Hierocles writes thus, (in p. 106 of the learned Thomas Taylor's Translation of *Political and Ethical Fragments*, 1822.) "The consideration of the duties pertaining to (our other) kindred, is consequent to the discussion of those that pertain to parents, brothers, wives, and children; for the same things may, in a certain respect be said of the former as of the latter; and on this account may be concisely explained. For, in short, each of us is, as it were, circumscribed by many circles; some of which are less, but others larger; and some comprehend, but others are comprehended, according to the different and unequal habitudes with respect to each other. For the first, indeed, and most proximate circle is that which every one describes about his own mind as a centre; in which circle the body, and whatever is assumed for the sake of the body, are comprehended. For this is nearly the smallest circle, and almost touches the centre itself. The second from this, and which is at a greater distance from the centre, but comprehends the first circle, is that in which parents, brothers, wife, and children, are arranged. The third circle from the centre is that which contains uncles and aunts, grandfathers and grandmothers, and the children of brothers and sisters. After this is the circle which comprehends the remaining relatives. Next to this is that which contains the common people, then that which comprehends those of the same tribe; afterwards that which contains the citizens: and then two other circles follow, one being the circle of those that dwell in the vicinity of the city, and the other, of those of the same province. But the outermost and greatest circle, and which comprehends all the other circles, is that of the whole human race." My friend Mr. Taylor makes these remarks: "This admirable passage is so conformable to the following beautiful lines in Pope's *Essay on Man*, that it is most probably the source from whence they were derived. The lines are these:

Self-love but serves the virtuous mind to wake,
As the small pebble stirs the peaceful lake;
The centre moved, a circle straight succeeds,

order that the schools ordain our affections,—to love our parents, wives, children, and then our friends; for, excepting the injunctions of religion, I do not find in myself such a necessary and indissoluble sympathy to all those of my blood. I hope I do not break the fifth commandment, if I conceive I

Another still, and still another spreads;
Friend, parent, neighbour, next it will embrace,
His country next, and next all human race;
Wide and more wide the o'erflowings of the mind
Take every creature in of every kind.

In Hierocles, however, the circles are scientifically detailed; in Pope they are synoptically enumerated. Pope too has added another circle to that which is the outermost with Hierocles, viz. the circle which embraces every creature of every kind. But as Hierocles, in this fragment, is only speaking of our duties to kindred, among which the whole human race is in a certain respect included, he had no occasion to introduce another circle, though the Platonic doctrine of benevolence is as widely extended as that of Pope."

Of eloquence combined with philosophy a nobler instance can scarcely be found than in the words of Barrow, where he describes the spirit of benevolence, sometimes diffusing itself over the collective interests of man, and sometimes emanating in the sweet and lovely charities of private life:—'Charity,' says he, 'is a right noble and worthy thing, greatly perfective of our nature, much dignifying and beautifying our soul. It rendereth a man truly great, enlarging his mind into a vast circumference, and to a capacity near infinite; so that it by a general care doth reach all things, by an universal affection doth embrace and grace the world. By it our reason obtaineth a field or scope of employment worthy of it, not confined to the slender interests of one person or one place, but extending to the concerns of all men. Charity is the imitation and copy of that immense love, which is the fountain of all being and all good; which made all things, which preserveth the world, which sustaineth every creature. Charity rendereth us as angels, or peers to those glorious and blessed creatures, who without receiving or expecting any requital from us, do heartily desire and delight in our good, are ready to promote it, do willingly serve and labour for it. Nothing is more amiable, more admirable, more venerable, even in the common eye and opinion of men; it hath in it a beauty and a majesty to ravish every heart; even a spark of it in generosity of dealing breedeth admiration; a glimpse of it in formal courtesie of behaviour procureth much esteem, being deemed to accomplish and adorn a man. How lovely, therefore, and truly gallant is an entire, sincere, constant, and uniform practice thereof, issuing from pure good-will and affection!' *Barrow's Sermons*, vol. i, p. 375."

One of the happiest illustrations I have ever seen, both of the more enlarged and the more limited benevolence, is in Hutcheson, and it well deserves to be quoted: 'This universal benevolence towards all men we may compare to that principle of gravitation, which perhaps extends to all bodies in the universe; but, like the love of benevolence, increases as its distance is diminished, and is strongest when bodies come to touch each other. Now, this increase of attraction, upon nearer approach, is as necessary to the frame of the universe, as that there should be any attraction at all; for a general attraction, equal in all distances, would, by the contrariety of such multitudes of equal forces, put an end to all its regularity of motion, and perhaps stop it altogether.' *Enquiry*, p. 222. In the foregoing words there is a complete description of philanthropy, so far as man, by his nature, is capable of feeling, or by reason or religion is required to practice it; and there is a complete refutation too of the strange notions that have gone abroad under the imposing name of philosophy. In No. 45 of the *Adventurer*, written by Dr. Johnson, imagery nearly the same as that of Hutcheson is applied to the same subject:—'The reigning philosophy informs us that the vast bodies which constitute the universe, are regulated, in their progress through the etherial spaces, by the perpetual agency of contrary forces; by one of which they are restrained from deserting their orbits, and losing themselves in the immensity of heaven, and held off by the other from rushing together and clustering round their centre with everlasting cohesion. The same contrariety of impulse may be perhaps discovered in

may love[3] my friend before the nearest of my blood, even those to whom I owe the principles of life. I never yet cast a true affection on a woman;[4] but I have loved my friend, as I do virtue, my sôul, my God. From hence, methinks, I do conceive how God loves man; what happiness there is in the love of God. Omitting all other, there are three most mystical unions; two natures in one person; three persons in one nature; one soul in two bodies. For though, indeed, they be really divided, yet are they so united, as they seem but one, and make rather a duality than two distinct souls.

Sect. vi.—There are wonders in true affection. It is a body of enigmas, mysteries, and riddles; wherein two so become one as they both become two: I love my friend before myself, and yet, methinks, I do not love him enough. Some few months hence, my multiplied affection will make me believe I have not loved him at all. When I am from him, I am dead till I be with him.[5] United souls are not satisfied with embraces, but desire to be truly each other; which being impossible, their desires are infinite, and must proceed without a possibility of satisfaction. Another misery there is in affection; that whom we truly love like our own selves, we forget their looks, nor can our memory retain the idea of their faces: and it is no wonder, for they are ourselves, and our affection makes their looks our own. This noble affection falls not on vulgar and common constitutions; but on such as are marked for virtue. He that can love his friend with this noble ardour will in a competent degree affect all.[6] Now, if we can bring our affections to look beyond the body, and cast an eye upon the soul, we have found out the true object, not only of

the motions of men; we are formed for society, not for combination; we are equally unqualified to live in a close connection with our fellow beings, and in total separation from them; we are attracted towards each other by general sympathy, but kept back from contact by private interests.'—*E. H. B.*

3 *conceive I may love*] *MSS.* and *Edts.* 1642 read, "confess I love."—*Ed.*

4 *I never yet cast a true affection on a woman;*] Moltkenius, the Latin Annotator, gives a very long note on this passage. He suggests that Sir Thomas probably thought it safest not to indulge the tender passion; an opinion which the learned commentator justifies by numerous authorities, bringing together, from various sources, a host of satirical and abusive passages against the fair sex.—*Ed.*

5 *him.*] Here occurs, in *MS. W.* and *Edts.* 1642, the following conclusion to the sentence: "when I am with him, I am not satisfied, but would still be nearer him."—*Ed.*

6 *He that can love, &c.*] All the *MSS.* and *Edts.* 1642 read, "He cannot love his friend with this noble ardour, that will in a competent degree affect all."—*Ed.*

friendship, but charity: and the greatest happiness that we can bequeath the soul is that wherein we all do place our last felicity, salvation; which, though it be not in our power to bestow, it is in our charity and pious invocations to desire, if not procure and further. I cannot contentedly[7] frame a prayer for myself in particular, without a catalogue for my friends; nor request a happiness wherein my sociable disposition doth not desire the fellowship of my neighbour. I never hear the toll of a passing bell,[8] though in my mirth,[9] without my prayers and best wishes for the departing[1] spirit. I cannot go to cure the body of my patient, but I forget my profession, and call unto God for his soul. I cannot see one say his prayers, but, instead of imitating him, I fall into supplication[2] for him, who perhaps is no more to me than a common nature: and if God hath vouchsafed an ear to my supplications, there are surely many happy that never saw me, and enjoy the blessing of mine unknown devotions. To pray for enemies, that is, for their salvation, is no harsh precept, but the practice of our daily and ordinary devotions. I cannot believe the story of the Italian; our bad wishes and uncharitable[3] desires proceed no further than this life: it is the devil, and the uncharitable votes of hell,[4] that desire our misery in the world to come.

Sect. vii.—"To do no injury nor take none" was a principle which, to my former[5] years and impatient affections, seemed to contain enough of morality, but my more settled years, and christian constitution, have fallen upon severer[6] resolutions. I can hold[7] there is no such thing as injury; that if there be, there is no such injury as revenge, and no such revenge as

7 *contentedly*] Not in *MSS.* or *Edts.* 1642.—*Ed.*

8 *the toll of a passing bell,*] Moltke, in a notice on this passage, says, that it was the custom in England to signify, by the tolling of a bell, when any one was in the agonies of death, in order that those who heard it, might offer up their prayers on behalf of the dying.—*Ed.*

9 *in my mirth,*] All the *MSS.* and *Edts.* 1642 read here, "and at a tavern."—*Ed.*

1 *departing*] *Edt.* 1642 *W.* reads, *departed.*—*Ed.*

2 *into supplication*] All the *MSS.* and *Edts.* 1642 read, "into a zealous oration."—*Ed.*

3 *uncharitable*] *MSS. W.* 2 and *R.* read, *malevolous.*—*Ed.*

4 *votes of hell,*] Meaning "*voices* or *prayers* of hell."

And here may be taken in those interchangeable *votes* of priest and people, which are interposed; "O Lord, arise, help us, &c." *Bp. Prideaux, Euch.* p. 225. —*Ed.*

5 *former*] *MSS. W.* and *Edts.* 1642 read, *firm*;—*MSS. W.* 2 & *R.* read, *infirm.*—*Ed.*

6 *severer*] All the *MSS.* and *Edts.* 1642 read, *securer.*—*Ed.*

7 *I can hold*] All the *MSS.* and *Edts.* 1642 read, *I hold.*—*Ed.*

the contempt of an injury: that to hate another is to malign himself; that the truest way to love another is to despise ourselves. I were unjust unto mine own conscience if I should say I am at variance with any thing like myself. I find there are many pieces in this one fabrick of man; this frame is raised upon a mass of antipathies: I am one methinks but as the world, wherein notwithstanding there are a swarm of distinct essences, and in them another world of contrarieties; we[8] carry private and domestick enemies within, public and more hostile adversaries without. 'The devil, that did but buffet St. Paul, plays methinks at sharp with me.[9] Let me be nothing, if, within the compass of myself, I do not find the battle of Lepanto,[1] passion against reason,[2] reason against faith, faith against the devil, and my conscience against all. There is another man within me that 's angry with me,[3] rebukes, commands, and dastards me. I have no conscience of marble, to resist the hammer of more heavy offences: nor yet too soft and waxen, as to take the impression of each single peccadillo or scape of infirmity. I am of a strange belief, that it is as easy to be forgiven some sins as to commit some others. For my original sin, I hold it to be washed away in my baptism; for my actual transgressions, I compute and reckon with God but from my last repentance, sacrament, or general absolution; and therefore am not terrified with the sins or madness of my youth. I thank the goodness of God, I have no sins that want a name. I am not singular in offences; my transgressions are epidemical, and from the common breath of our corruption.[4] For there are certain tempers of body

[8] *we*] *MSS. W. & R.* and *Edts.* 1642 read, *which.—Ed.*

[9] *plays methinks at* sharp *with me.*] *Sharp;* "a rapier, or pointed weapon." "If butchers had but the manners to go to *sharps*, gentlemen would be contented with a rubber at cuffs." *Collier.* See *Johnson's Dictionary.—Ed.*

[1] *battle of Lepanto,*] This must allude to the battle between Don John of Austria and the Turkish fleet, near Lepanto, in the year ~~1571~~; for what is generally termed the battle of Lepanto, was the taking of the town from the Turks by the Venetians, in the year 1678.

This is *translated,* 'totam Pharsaliam' by Merryweather, whom the French translator thus paraphrases: "Je sens en moiméme les cruelles guerres civiles, qu'il y eut entre César et Pompée dans la Pharsalie." The French edition was certainly not translated from the original, though it professes to be so.—*Ed.*

[2] *passion against reason,*] All the *MSS.* and *Edts.* 1642, 1643, and 1645, read, "passion against passion;" which reading is followed by the Latin and French translations.—*Ed.*

[3] *that 's angry with me,*] These words are not in *MS. W.* nor *Edts.* 1642.—*Ed.*

[4] *corruption.*] The passage which occupies the next ten lines, to "yet, even those common, &c." is not in the *MSS.* nor *Edts.* 1642.—*Ed.*

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which, matched with an humorous depravity of mind, do hatch and produce vitiosities, whose newness and monstrosity of nature admits no name; this was the temper of that lecher that carnaled with a statue, and the constitution of Nero in his spintrian recreations. For the heavens are not only fruitful in new and unheard of stars, the earth in plants and animals, but men's minds also in villainy and vices. Now the dulness of my reason, and the vulgarity of my disposition, never prompted my invention nor solicited my affection unto any of these;—yet even those common and quotidian infirmities that so necessarily attend me, and do seem to be my very nature, have so dejected me, so broken the estimation that I should have otherwise of myself, that I repute myself the most abject piece of mortality.[5] Divines prescribe a fit of sorrow to repentance: there goes indignation, anger, sorrow,[6] hatred, into mine, passions of a contrary nature, which neither seem to suit with this action, nor my proper constitution. It is no breach of charity to ourselves to be at variance with our vices, nor to abhor that part of us, which is an enemy to the ground of charity, our God; wherein we do but imitate our great selves, the world, whose divided antipathies and contrary faces do yet carry a charitable regard unto the whole, by their particular discords preserving the common harmony, and keeping in fetters those powers, whose rebellions, once masters, might be the ruin of all.

Sect. viii.—I thank God, amongst those millions of vices I do inherit and hold from Adam, I have escaped one, and that a mortal enemy to charity,—the first and father sin, not only of man, but of the devil,[7]—pride;[8] a vice whose name is compre-

5 *mortality.*] Here occurs, in all the *MSS.* and *Edts.* 1642, the following additional clause; "that I detest mine own nature, and in my retired imaginations cannot withhold my hands from violence on myself."—*Ed.*

6 *sorrow,*] *MSS. W.* 2 & *R.* read, *contempt.*—*Ed.*

7 *not only of man, but of the devil,*] All the *MSS.* and *Edts.* 1642 read, "not of man, but of devils."—*Ed.*

8 *I thank God, &c.*] This passage has led Dr. Watts to charge our author with "arrogant temerity" in asserting his exemption from the "father sin" of our nature. And his biographer, Dr. Johnson, scarcely rebuts the charge.

The passage, however, has, in reality, nothing to do with pride in that more extended sense in which Dr. Watts regarded it: it relates rather to the pride of literary attainments. Sir Thomas asserts his freedom from that self-conceitedness which he had observed in men of much less acquirement than himself.—And surely we may accept Dr. Johnson's challenge, and appeal to "a perusal of *Religio Medici,*" in proof that no one

hended in a monosyllable, but in its nature not circumscribed with a world, I have escaped it in a condition that can hardly avoid it. Those petty acquisitions and reputed perfections, that advance and elevate the conceits of other men, add no feathers unto mine. I have seen a grammarian tower and plume himself over a single line in Horace, and show more pride, in the construction of one ode, than the author in the composure of the whole book. For my own part, besides the jargon and *patois*[9] of several provinces, I understand no less than six

could entertain humbler opinions and feelings respecting himself, as a sinful and feeble creature in the face of his Maker, than did Sir Thomas Browne. See, for example, §§ 58 and 59,—read the following passage in the preceding section; "even those common and quotidian infirmities that so necessarily attend me, and do seem to be my very nature, have so dejected me, so broken the estimation that I should have otherwise of myself, that I repute myself the most abject piece of mortality." In the 4th section of pt. 2, is another passage, which exhibits in the strongest light his real opinion of himself, as before God, and contains the justest reproof of the too hasty conclusions of Dr. Watts. "No man can justly censure or condemn another; because indeed no man truly knows another. This I perceive in myself; for I am in the dark to all the world, and my nearest friends behold me but in a cloud: those that know me superficially think less of me than I do of myself: those of my near acquaintance think more: God, who truly knows me, knows that I am nothing." See also his exquisite *Evening Hymn*, in the 12th section, pt. 2.

In having written *Religio Medici* Sir T. B. may indeed be said to have given the fullest proof of *pride:* for what man of any common modesty would think his own opinions or character of sufficient importance to justify such a work? So far as this question involves an attack on all auto-biography—the most interesting description of personal history—we leave it to be answered by those who list. But, as it bears on the censure in question, we reply that *Religio Medici* was *not written for the publick*—it is the self-examination of a philosophical and enthusiastick mind: —it is his comparison of his own peculiarities with those of other men and other minds;—and let it not be forgotten, he was *talking to himself*, though in the event he was *overheard* by the publick. To say that he was egotistical is merely to say that he was writing about himself: to use his own words, "The world that I regard is myself: it is the microcosm of my own frame that I cast my eye on." But this egotism, to conclude with the remarks of one of his most brilliant admirers, "is always the result of a feeling heart, conjoined with a mind of active curiosity, the natural and becoming egotism of a man, who, loving other men as himself, gains the habit and the privilege of talking about himself as familiarly as about other men. Fond of the curious, and a hunter of oddities and strangenesses, while he conceives himself, with quaint and humorous gravity, a useful inquirer into physical truths and fundamental science, he loved to contemplate and discuss his own thoughts and feelings, because he found, by comparison with other men's, that *they*, too, were curiosities; and so, with a perfectly graceful interesting ease, he put *them*, too, into his museum and cabinet of rarities. In very truth, he was not mistaken; so completely does he see every thing in a light of his own, reading nature neither by sun, moon, or candle light, but by the light of the fairy glory around his own head, that you might say, that nature had granted to *him* in perpetuity, a patent and monopoly for all his thoughts." *Coleridge's Remarks on Sir Thomas Browne, in the London Magazine for November*, 1819.—*Ed.*

[9] *Jargon and* Patois] These words seem to have puzzled both copyists and printers—*MSS. W. & R.* read, "Fargon and Patoiz;" *MS. W.* 2 has, "ffargon and *****;" *Edts.* 1642, "Fargon and Patonis."

Patois, the provincial dialect of the peasantry of France: often applied to any provincial dialect.—*Ed.*

languages; yet I protest I have no higher conceit of myself than had our fathers before the confusion of Babel, when there was but one language in the world, and none to boast himself either linguist or critick. I have not only seen several countries, beheld the nature of their climes, the chorography of their provinces, topography of their cities, but understood their several laws, customs, and policies; yet cannot all this persuade the dulness of my spirit unto such an opinion of myself as I behold in nimbler and conceited heads, that never looked a degree beyond their nests. I know the names and somewhat more of all the constellations in my horizon; yet I have seen a prating mariner, that could only name the pointers and the north-star, out talk me, and conceit himself a whole sphere above me. I know most of the plants of my country, and of those about me, yet methinks I do not know so many as when I did but know a hundred, and had scarcely ever simpled further than Cheapside. For, indeed, heads of capacity, and such as are not full with a handful or easy measure of knowledge, think they know nothing till they know all; which being impossible, they fall upon the opinion of Socrates,[1] and only know they know not any thing. I cannot think that Homer pined away upon the riddle of the fishermen, or that Aristotle, who understood the uncertainty of knowledge, and confessed so often the reason of man too weak for the works of nature, did ever drown himself upon the flux and reflux of Euripus.[2] We do but learn, to-day, what our better advanced judgements will unteach,[3] to-morrow; and Aristotle doth but instruct us, as Plato did him, that is, to confute himself. I have run through all sorts, yet find no rest in any: though our first studies and junior endeavours may style us Peripateticks, Stoicks, or Academicks, yet I perceive the wisest heads prove, at last, almost all Scepticks,[4] and stand like Janus in the field of knowledge. I have

1 *opinion of Socrates, &c.*] Quæ extat apud *Platon. in Apologia Socratis;* Vid. etiam *Diog. Laertium, in Vit. Socratis,* lib. ii.—*M.*

2 *Euripus.*] *Strab.* lib. 9; *Plin.* lib. ii, c. 97; *Cic. De Nat. Deor.* lib. iii.—*M.*

See also the author's remarks in *Vulgar Errors,* b. vii, c. 13.—*Ed.*

3 *unteach,*] All the *MSS.* and *Edits.* 1642 read, *teach.*—*Ed.*

4 *Scepticks,*] "The Scepticks profess to deny that we have any such thing as science; that is to say, a perception of any thing so clear and certain, and founded on such self-evident principles, as to produce absolute conviction."—*Ed.*

therefore one common and authentick philosophy I learned in the Schools, whereby I discourse and satisfy the reason of other men; another more reserved, and drawn from experience, whereby I content mine own. Solomon, that complained of ignorance in the height of knowledge, hath not only humbled my conceits, but discouraged my endeavours. There is yet another conceit that hath sometimes made me shut my books, which tells me it is a vanity to waste our days in the blind pursuit of knowledge: it is but attending a little longer, and we shall enjoy that, by instinct and infusion,[5] which we endeavour at here by labour and inquisition. It is better to sit down in a modest ignorance, and rest contented with the natural blessing of our own reasons, than buy the uncertain knowledge of this life with sweat and vexation, which death gives every fool gratis,[6] and is an accessary of our glorification.

SECT. IX.—I was never yet once [married], and commend their resolutions who never marry twice.[7] Not that I disallow of second marriage; as neither in all cases of polygamy, which considering some times,[8] and the unequal number of both sexes, may be also necessary. The whole world was made for man, but the twelfth part of man for woman. Man is the whole world, and the breath of God; woman the rib, and crooked piece of man. I could be content that we might procreate like trees, without conjunction, or that there were any way to perpetuate the world without this trivial and vulgar way of coition: it is the foolishest act a wise man commits in all his life, nor is there any thing that will more deject his cooled imagination, when he shall consider what an odd and unworthy piece of folly he hath committed.[9] I speak not in prejudice, nor am

5 *we shall enjoy that, by instinct, &c.*] "As to Natural Philosophy," remarks Dr. Jortin, "good men will probably have better opportunities to study it in a future state." *Jortin's Tracts*, vol. ii, p. 533.—*Ed.*

6 *gratis,*] *MS. W.* and *Edts.* 1642 read, *gains; MSS. W.* 2 *& R. grants.* —*Ed.*

7 *I was never yet once [married] &c.*] All the *MSS.* and *Edts.* 1642 read, "I was never yet once and am resolved never to be married twice." The awkward construction of this sentence, in its altered state, as it stands in all the authorized editions, without the word [*married*], shews clearly that the author altered it for the *publick eye*;—a fact which he has betrayed by omitting in his haste to insert the participle where his change made it indispensable."—*Ed.*

8 *some times, and*] Omitted in all the *MSS.* and *Edts.* 1642. The 4to. ed. 1672 and fol. 1686, absurdly read, "sometimes and."—*Ed.*

9 *I could* be content, &c.] See *Essais de Montaigne*, l. iii, c. 5.—*K.*

All the *MSS.* and *Edts.* 1642 read, "I could *wish*."—*Ed.*

averse from that sweet sex, but naturally amorous of all that is beautiful. I can look a whole day with delight upon a handsome picture, though it be but of an horse. It is my temper, and I like it the better, to affect all harmony; and sure there is musick, even in the beauty and the silent note which Cupid strikes, far sweeter than the sound[1] of an instrument. For there is a musick wherever there is a harmony, order, or proportion; and thus far we may maintain "the musick of the spheres:" for those well-ordered motions, and regular paces, though they give no sound unto the ear, yet to the understanding they strike a note most full of harmony.[2] Whatsoever is harmonically composed delights in harmony, which makes me much distrust the symmetry of those heads which declaim against all church-musick. For myself, not only from my obedience but my particular genius I do embrace it:[3] for even that vulgar and tavern-musick,[4] which makes one man merry, another mad, strikes in me a deep fit of devotion, and a profound contemplation of the first composer.[5] There is something in it of divinity more than the ear discovers: it is an hieroglyphical and shadowed lesson of the whole world, and creatures of God,—such a melody to the ear, as the whole

1 *sound*] All the *MSS.* and *Edts.* 1642 read, "vocal sound."—*Ed.*

2 *though they give no sound, &c.*] Might not this extraordinary passage have suggested to Addison the following beautiful conclusion to his Hymn on the Glories of Creation?

"What though, in solemn silence, all
Move round the dark terrestrial ball;
What though no real voice or sound
Amid their radiant orbs be found;

In reason's ear they all rejoice,
And utter forth a glorious voice;
For ever singing, as they shine,
'The hand that made us is divine.'"

Ed.

3 *not only from my obedience, &c.*] All the *MSS.* and *Edts.* 1642 read, "not only for my Catholick obedience, but my particular genius, I am obliged to maintain it."—*Ed.*

4 *even that vulgar and* tavern-musick,] "Musick is an intellectual or a sensual pleasure, according to the temperament of him who hears it. And, by the by, with the exception of the fine extravaganza on that subject in Twelfth Night, I do not recollect more than one thing said adequately on the subject of musick in all literature: it is a passage in the *Religio Medici* of Sir T. Browne; and, though chiefly remarkable for its sublimity, has also a philosophick value, inasmuch as it points to the true theory of musical effects. The mistake of most people is to suppose that it is by the ear they communicate with musick, and, therefore, that they are purely passive to its effects. But this is not so: it is by the reaction of the mind upon the notices of the ear, (the *matter* coming by the senses, the *form* from the mind,) that the pleasure is constructed: and therefore it is that people of equally good ear differ so much in this point from one another." *Confessions of an English Opium-Eater*, p. 106.—*Ed.*

Of the *tavern-musick*, the French Editor says, "C'est la coutume, ou la manière en Angleterre, d'avoir dans la plûpart des cabarets des instruments musicaux, sur lesquels on joue."—*Fr. Tr.*

5 *of the first composer.*] All the *MSS.* and *Edts.* 1642 read, "of my Maker."—*Ed.*

world, well understood, would afford the understanding. In brief, it is a sensible fit of that harmony which intellectually sounds in the ears of God.[6] I will not say, with Plato,[7] the soul is an harmony, but harmonical, and hath its nearest sympathy unto musick: thus some, whose temper of body agrees, and humours the constitution of their souls, are born poets, though indeed all are naturally inclined unto rhythm. This made Tacitus, in the very first line of his story, fall upon a verse;* and Cicero,[8] the worst of poets, but declaiming for a poet, falls in the very first sentence upon a perfect hexameter.†

* Urbem Romam in principio reges habuere. *Taciti Annales*, l. i.
† In qua me non inficior mediocriter esse. *Cicero pro Archia Poeta.*

6 *God.*] All the *MSS.* and *Edts.* 1642 add the following passage:—"It unties the ligaments of my frame, takes me to pieces, dilates me out of myself, and by degrees methinks resolves me into heaven,"—*Ed.*

7 *with Plato, &c.*] Plato dixit, "animam concordiæ musicæ esse similem."—Vid. *Marcil. Ficin. in Platonis Timæum*, c. 28.—*M.*

8 *and Cicero,*] The sin is, however, wrongly laid at Cicero's door; for that Oration cannot be regarded as his composition.

Obiter de versibus prosæ orationi intextis a scriptoribus, insciis sæpius, nonnunquam pravo numerorum sensu deceptis, lectorem monebo adeat Marklandum ad *Suppl.* 901, p. 184; Bosium, Staveren. Heusinger. ad *Nepotis Proœmium*; Dorv. ad *Char.* 620; W. S. Walker, qui se Cæcilium Metellum nuncupare amat, in *Classica Ephemeride*, t. xv, p. 181, xvi, p. 334, xvii, p. 349, xix, p. 328, xx, p. 345, xxi, p. 278, xxii, p. 171, xxiii, p. 43. 296. Versus in prosaicis Italis Scriptoribus deprehendit Tasson. ad Petrarchæ initium. Et in nostratibus non desunt exempla. Marmontelius, qui in *Narratione Morali* cui index est Amicitiæ Schola, "Laissez donc la simple amitié doucement amuser le loisir de son âme," omnino est reprehensione dignus; nam nimia in his est cacozelia, cum ipsa adverbii inversio ipsum de metro admonerit. Vide et Vaugelasii *Animadver. de Lingua Gallica*, p. 117, collato Menagio, *Obs.* 190, *Menagiana*, i, 40. 77. 144. iii, 382, ubi similia vitia in Molierii et Ablancurtii oratione notantur; Carpentarium *de Excell. Ling. Gall.* 684, Clericum *Bibl. Univ.* v, 258. Daunovium ad *Boilavii Longin.* 8. Neckera *Misc.* ii, 15. 'Les vers gâtent l'harmonie de la prose; mais un hémistiche réussit quelquefois, et tombe agréablement pour l'oreille.'"

With respect to the poetical talents of Cicero, the line,

O fortunatam natam, me Consule Romam,

is ridiculed by Juvenal for the very alliteration, which Cicero, agreeably to the taste of the age and the practice of his predecessors, affected: examples of alliteration abound in Lucretius, from whom I have cited many instances in *Classical Journal*, liii, 132. But ever after monarchy had been established in Rome, it was fashionable and courtly to abuse the name of Cicero,—a name dear alike to eloquence and learning, to liberty and patriotism, to dignity and virtue. To question his oratorical talents would have been a vain attempt. The parasites of those times therefore, directed their wit against his poetical effusions, because they are more open to attack; and Juvenal had fallen into their ideas. I am persuaded, however, that, if the verses of Cicero be compared with the poetical compositions of his predecessors, contemporaries, and coevals, they will not be found so deficient in merit. But while I admit that, if they are measured by the Virgilian standard, they must sink into insignificance, I cannot justly forget that no poet, who wrote before the time of Virgil, can enter the lists with the Mantuan bard. —*E. H. B.*

I feel not in me those sordid and unchristian desires of my profession;[9] I do not secretly implore and wish for plagues, rejoice at famines, revolve ephemerides and almanacks in expectation of malignant aspects, fatal conjunctions, and eclipses. I rejoice not at unwholesome springs nor unseasonable winters: my prayer goes with the husbandman's; I desire every thing in its proper season, that neither men nor the times be out of temper. Let me be sick myself, if sometimes the malady of my patient be not a disease unto me. I desire rather to cure his infirmities than my own necessities. Where I do him no good, methinks it is scarce honest gain,[1] though I confess 't is but the worthy salary of our well intended endeavours. I am not only ashamed but heartily sorry, that, besides death, there are diseases incurable; yet not for my own sake or that they be beyond my art, but for the general cause and sake of humanity, whose common cause I apprehend as mine own. And, to speak more generally, those three noble professions which all civil commonwealths do honour, are raised upon the fall of Adam, and are not any way exempt from their infirmities. There are not only diseases incurable in physick, but cases indissolvable in law, vices incorrigible in divinity. If general councils may err,[2] I do not see why particular courts should be infallible: their perfectest rules are raised upon the erroneous reasons of man, and the laws of one do but condemn the rules of another; as Aristotle oft times the opinions of his predecessors,[3] because, though agreeable to reason, yet [they] were not consonant to his own rules and the logick of his proper principles. Again,—to speak nothing of the sin against the Holy Ghost, whose cure not only, but whose nature is unknown,—I can cure the gout or stone in some, sooner than divinity pride or avarice in others. I can cure vices by physick when they remain incurable by divinity, and they shall obey my pills when they contemn their precepts. I boast nothing, but plainly say, we all labour against our own cure;

9 *sordid and unchristian desires, &c.*] "Medicis gravis annus in quæstu est." *Senec. de Benefic.* l. vi, c. 38.—*M.*

1 *scarce honest gain,*] All the *MSS.* and *Edts.* 1642 read, "no honest gain."—*Ed.*

2 *If general councils may err,*] Bodinus, *de Republ.* l. iv, c. 7, docet, Arianorum doctrinam octo consiliis confirmatam.—*M.*

3 *ofttimes the opinions of his predecessor.*,] Instead of these words, all the *MSS.* and *Edts.* 1642 read, "the fourth figure."—*Ed.*

for death is the cure of all diseases. There is no *catholicon* or universal remedy I know, but this, which though nauseous to queasy stomachs, yet to prepared appetites is nectar, and a pleasant potion of immortality.

SECT. X.—For my conversation, it is, like the sun's, with all men,[4] and with a friendly aspect to good and bad. Methinks there is no man bad; and the worst best, that is, while they are kept within the circle of those qualities, wherein they are good. There is no man's mind of so discordant and jarring a temper, to which a tuneable disposition may not strike a harmony. *Magnæ virtutes, nec minora vitia;* it is the posy[5] of the best natures, and may be inverted on the worst. There are, in the most depraved and venomous dispositions, certain pieces that remain untouched, which by an *antiperistasis*[6] become more excellent, or by the excellency of their antipathies are able to preserve themselves from the contagion of their enemies' vices, and persist entire beyond the general corruption. For it is also thus in nature: the greatest balsams do lie enveloped in the bodies of the most powerful corrosives. I say moreover, and I ground upon experience, that poisons contain within themselves their own antidotes, and that which preserves them from the venom of themselves; without which they were not deleterious to others only, but to themselves also.[7] But it is the corruption that I fear within me; not[8] the contagion of commerce without me. 'T is that unruly regiment within me, that will destroy me; 't is I that do infect myself; the man without a navel* yet lives in me. I feel that

* Adam, whom I conceive to want a navel, because he was not born of a woman. *MS. W.*

[4] *like the sun's, with all men,*] All the *MSS.* and *Edts.* 1642 read, "like the sun, without all men."—*Ed.*

[5] *posy*] Or *poesy:* a motto on a ring, or any thing else:—"I should as soon expect to see a critick on the *posy* of a ring, as on the inscription of a medal.—*Addison.*

[6] antiperistasis] The opposition of a contrary quality, by which the quality it opposes becomes heightened."—*Ed.*

[7] *poisons contain,* &c.] The poison of a scorpion is not poison to itself, nor the poison of a toad is not poison to itself; so that the sucking out of poison, from persons infected, by Psylls, (who are continually nourished with venomous aliment,) without any prejudice to themselves, is the less to be wondered at.—*K.*

The Psylls, or Psylli, are a people in the south of Cyrenaica, said to have had something in their bodies fatal to serpents, and their very smell proved a charm against them, according to Pliny, Lucan, &c. Curious particulars may be found about these people, or people who seem to be so constituted, in the travels of Hasselquist, Bruce, Savary, &c.—*Ed.*

[8] *not*] All the *MSS.* and *Edts.* 1642 read, *and.*—*Ed.*

original canker corrode and devour me: and therefore, *Defenda me, Dios, de me!* "Lord, deliver me from myself!" is a part of my litany, and the first voice of my retired imaginations. There is no man alone, because every man is a microcosm, and carries the whole world about him. '*Nunquam minus solus quam cum solus*, though it be the apothegm of a wise man,[9] is yet true in the mouth of a fool: for indeed, though in a wilderness, a man is never alone; not only because he is with himself, and his own thoughts, but because he is with the devil, who ever consorts with our solitude, and is that unruly rebel that musters up those disordered motions which accompany our sequestered imaginations. And to speak more narrowly, there is no such thing as solitude, nor any thing that can be said to be alone, and by itself, but God;—who is his own circle, and can subsist by himself: all others, besides their dissimilary and heterogeneous parts, which in a manner multiply their natures, cannot subsist without the concourse[1] of God, and the society of that hand which doth uphold their natures. In brief, there can be nothing truly alone, and by its self, which is not truly one, and such is only God: all others do transcend an unity, and so by consequence are many.

Sect. xi.—Now for my life, it is a miracle of thirty years, which to relate, were not a history, but a piece of poetry, and would sound to common ears like a fable. For the world, I count it not an inn, but an hospital; and a place not to live, but to die in. The world that I regard is myself; it is the microcosm of my own frame that I cast mine eye on: for the other, I use it but like my globe, and turn it round sometimes for my recreation. Men that look upon my outside, perusing only my condition and fortunes, do err in my altitude; for I am above Atlas's shoulders.[2] The earth is a point not only in respect of the heavens above us, but of that heavenly and celestial part within us. That mass of flesh that circumscribes me limits not my mind. That surface that tells the heavens it hath an end cannot persuade me I have any. I take my circle to be

[9] nunquam minus solus, &c.] Hoc dicere solitus est Publius Scipio; vid. *Cicero de Officiis*, l. iii.—*M.*

[1] *concourse*] Used here undoubtedly in the sense of *concurrence*.—*Ed.*

[2] *I am above Atlas's shoulders*] Meaning, "I am *a world*."

The following nine sentences, ending with "alphabet of man," are not in the *MSS.* nor *Edts.* 1642.—*Ed.*

above three hundred and sixty. Though the number of the ark do measure my body, it comprehendeth not my mind. Whilst I study to find how I am a microcosm, or little world, I find myself something more than the great. There is surely a piece of divinity in us; something that was before the elements, and owes no homage unto the sun. Nature tells me, I am the image of God, as well as Scripture. He that understands not thus much hath not his introduction or first lesson, and is yet to begin the alphabet of man. Let me not injure the felicity of others, if I say I am as happy as any.[3] *Ruat cœlum, fiat voluntas tua,* salveth all; so that, whatsoever happens, it is but what our daily prayers desire. In brief, I am content; and what should providence add more? Surely this is it we call happiness, and this do I enjoy; with this I am happy in a dream, and as content to enjoy a happiness in a fancy, as others in a more apparent truth and reality. There is surely a nearer apprehension of any thing that delights us, in our dreams, than in our waked senses.[4] Without this I were unhappy; for my awaked judgement discontents me, ever whispering unto me that I am from my friend, but my friendly dreams in the night requite me, and make me think I am within his arms. I thank God for my happy dreams, as I do for my good rest; for there is a satisfaction in them unto reasonable desires, and such as can be content with a fit of happiness. And surely it is not a melancholy conceit to think we are all asleep in this world, and that the conceits of this life are as mere dreams, to those of the next, as the phantasms of the night, to the conceit of the day. There is an equal delusion in both; and the one doth but seem to be the emblem or picture of the other. We are somewhat more than ourselves in our sleeps; and the slumber of the body seems to be but the waking of the soul. It is the ligation of sense, but the liberty of reason; and our waking conceptions

3 *as happy as any.*] All the *MSS.* and *Edts.* 1642 read, "the happiest man alive;"—and add the following passage; —"I have that in me, that can convert poverty into riches, adversity into prosperity; I am more invulnerable than Achilles; fortune hath not one place to hit me."—*Ed.*

4 *waked senses.*] Here all the *MSS.* and *Edts.* 1642 add, "with this I can be a king, without a crown, rich without royalty, in heaven though on earth, enjoy my friend and embrace him at a distance, without which I cannot behold him."—*Ed.*

do not match the fancies of our sleeps. At my nativity, my ascendant was the earthly sign of *Scorpio*. I was born in the planetary hour of *Saturn*,[5] and I think I have a piece of that leaden planet in me. I am no way facetious, nor disposed for the mirth and galliardise[6] of company; yet in one dream I can compose a whole comedy, behold the action, apprehend the jests, and laugh myself awake at the conceits thereof. Were my memory as faithful as my reason is then fruitful, I would never study but in my dreams, and this time also would I choose for my devotions: but our grosser memories have then so little hold of our abstracted understandings, that they forget the story, and can only relate to our awaked souls a confused and broken tale of that which hath passed. Aristotle, who hath written a singular tract of sleep, hath not methinks thoroughly defined it; nor yet Galen, though he seem to have corrected it; for those *noctambulos* and night-walkers, though in their sleep, do yet enjoy the action of their senses. We must therefore say that there is something in us that is not in the jurisdiction of Morpheus; and that those abstracted and ecstatick souls do walk about in their own corpses, as spirits with the bodies they assume, wherein they seem to hear, see, and feel, though indeed the organs are destitute of sense, and their natures of those faculties that should inform them. Thus it is observed, that men sometimes,[7] upon the hour of their departure, do speak and reason above themselves. For then the soul begins to be freed from the ligaments of the body, begins to reason like herself, and to discourse in a strain above mortality.

Sect. xii.—We term sleep a death;[8] and yet it is waking that kills us, and destroys those spirits that are the house of life.[9] 'T is indeed a part of life that best expresseth death; for every man truly lives, so long as he acts his nature, or some way makes good the faculties of himself. Themistocles

5 *planetary hour of* Saturn,] After referring to several writers on judicial astrology, Moltke adds; "Sed propria experientia didici, Astrologiæ judiciaria parum esse tribuendum!"—*Ed.*

6 *galliardise*] *Merriment.* Johnson quotes the present passage as the only authority for the use of this word, which he says is "not in use."—*Ed.*

7 *it is observed, that men sometimes,*] All the *MSS.* and *Edts.* 1642 read, "I observe that men oftentimes."—*Ed.*

8 *sleep a death;*] All the *MSS.* and *Edts.* 1642 read, "death a sleep."—*Ed.*

9 *life.*] In all the *MSS.* and *Edts.* 1642 the sentences, occupying the six following lines, to the words "discover it," are wanting."—*Ed.*

therefore, that slew his soldier in his sleep, was a merciful executioner: 't is a kind of punishment the mildness of no laws hath invented; I wonder the fancy of Lucan and Seneca did not discover it. It is that death by which we may be literally said to die daily; a death which Adam died before his mortality; a death whereby we live a middle and moderating point between life and death. In fine, so like death, I dare not trust it without my prayers, and an half adieu unto the world, and take my farewell[1] in a colloquy with God:—

The night is come, like to the day;
Depart not thou, great God, away.
Let not my sins, black as the night,
Eclipse the lustre of thy light.
Keep still in my horizon; for to me
The sun makes not the day, but thee.
Thou whose nature cannot sleep,
On my temples sentry kèep;
Guard me 'gainst those watchful foes,
Whose eyes are open while mine close.
Let no dreams my head infest,
But such as Jacob's temples blest.
While I do rest, my soul advance;
Make my sleep a holy trance:
That I may, my rest being wrought,
Awake into some holy thought.
And with as active vigour run
My course as doth the nimble sun.
Sleep is a death;—O make me try,
By sleeping, what it is to die!
And as gently lay my head
On my grave, as now my bed.
Howe'er I rest, great God, let me
Awake again at last with thee.
And thus assur'd, behold I lie
Securely, or to wake or die.
These are my drowsy days; in vain
I do now wake to sleep again:
O come that hour, when I shall never
Sleep again, but wake for ever!

This is the dormitive I take to bedward; I need no other *laudanum* than this to make me sleep; after which I close mine eyes in security, content to take my leave of the sun, and sleep unto the resurrection.

SECT. XIII.—The method I should use in distributive justice, I often[2] observe[3] in commutative; and keep a geometrical

[1] *and take my farewell &c.*] Instead of these words, all the *MSS.* and *Edts.* 1642 read, "It is a fit time for devotion; I cannot therefore lay me down in my bed without an oration and without taking my farewell &c."—*Ed.*

[2] *often*] All the *MSS.* and *Edts.* 1642 read, *also.—Ed.*

[3] *distributive justice, &c.*] "Justice, though it be but one entire virtue, yet is

proportion in both, whereby becoming equable to others, I become unjust to myself, and supererogate in that common principle, "Do unto others as thou wouldst be done unto thyself." I was not born unto riches, neither is it, I think, my star to be wealthy; or if it were, the freedom of my mind, and frankness of my disposition, were able to contradict and cross my fates: for to me avarice seems not so much a vice, as a deplorable piece of madness; to conceive ourselves urinals, or be persuaded that we are dead, is not so ridiculous, nor so many degrees beyond the power of hellebore,[4] as this. The opinions of theory, and positions of men, are not so void of reason, as their practised conclusions. Some have held that snow is black, that the earth moves, that the soul is air, fire, water; but all this is philosophy: and there is no delirium, if we do but speculate the folly and indisputable dotage of avarice.[5] To that subterraneous idol, and God of the earth, I do confess I am an atheist. I cannot persuade myself to honour that the world adores; whatsoever virtue its prepared substance[6] may have within my body, it hath no influence nor operation without. I would not entertain a base design, or an action that should call me villain, for the Indies; and for this only do I love and honour my own soul, and have methinks two arms too few to embrace myself. Aristotle is too severe, that will not allow us to be truly liberal without wealth, and the bountiful hand of fortune; if this be true, I must confess I am charitable only in my liberal intentions, and bountiful well wishes. But if the example of the mite be not only an act of wonder, but an example of the noblest charity, surely poor men may also build hospitals, and the rich alone have not erected cathedrals.[7] I have a private method which others observe not; I take the opportunity of myself to do good; I borrow occasion of charity

described in two kinds—one, named *justice distributive*, which is in distribution of honour, money, benefice, or other thing semblable: the other is called *commutative*, or by exchange." *Sir T. Elyot, Gov.* fol. 142.—*Ed.*

4 *hellebore,*] Said to be a specific against madness.—*Ed.*

5 *there is no delirium, &c.*] "Meaning there is nothing deserving the name of delirium, when compared with the folly of avarice, &c."—*Ed.*

6 *its prepared substance, &c.*] Alluding to the *aurum portabile*, of which see *Vulgar Errors*, b. iii, c. 23.—*Ed.*

7 *surely poor men &c.*] All the *MSS.* and *Edts.* 1642 read, "I can justly boast I am as charitable as some who have built hospitals, or erected cathedrals."—*Ed.*

from my own necessities, and supply the wants of others, when I am in most need myself:[8] for it is an honest stratagem to take advantage of ourselves, and so to husband the acts of virtue, that, where they are defective in one circumstance, they may repay their want, and multiply their goodness in another. I have not Peru in my desires, but a competence and ability to perform those good works to which [the Almighty][9] hath inclined my nature. He is rich who hath enough to be charitable; and it is hard to be so poor that a noble mind may not find a way to this piece of goodness. "He that giveth to the poor, lendeth to the Lord:" there is more rhetorick in that one sentence than in a library of sermons. And indeed, if those sentences were understood by the reader with the same emphasis as they are delivered by the author, we needed not those volumes of instructions, but might be honest by an epitome. Upon this motive only I cannot behold a beggar without relieving his necessities with my purse, or his soul with my prayers. These scenical and accidental differences between us cannot make me forget that common and untoucht part of us both: there is under these centoes[1] and miserable outsides, those mutilate and semi bodies, a soul of the same alloy[2] with our own, whose genealogy is God as well as ours, and in as fair a way to salvation as ourselves. Statists that labour to contrive a commonwealth without poverty take away the object of our charity; not understanding only[3] the commonwealth of a christian, but forgetting the prophecy of Christ.*

SECT. XIV.—Now, there is another part of charity, which is the basis and pillar of this, and that is the love of God, for whom we love our neighbour; for this I think charity, to love God for himself, and our neighbour for God. All that is truly amiable is God, or as it were a divided piece of him, that retains a reflex or shadow of himself. Nor is it strange

* "The poor ye shall have always with you."—*MS. W.*

8 *myself:*] Here all the *MSS.* and *Edts.* 1642 add, "when I am reduced to the last tester, I love to divide it with the poor."—*Ed.*

9 *the Almighty*] The words between brackets are inserted from *MS. W.* and *Edts.* 1642; the others read, *he.*—*Ed.*

1 *centoes*] Patched garments.—*Ed.*

2 *both: there is under &c.*] Instead of this sentence, all the *MSS.* and *Edts.* 1642 read, "both, the soul, being of the same alloy."—*Ed.*

3 *not understanding only*] Or rather "not only not understanding."—*Ed.*

that we should place affection on that which is invisible: all that we truly love is thus. What we adore under affection of our senses deserves not the honour of so pure a title. Thus we adore virtue, though to the eyes of sense she be invisible. Thus that part of our noble friends that we love is not that part that we embrace, but that insensible part that our arms cannot embrace. God being all goodness, can love nothing but himself; he loves us but for that part which is as it were himself, and the traduction of his Holy Spirit. Let us call to assize the loves[4] of our parents, the affections of our wives and children, and they are all dumb shews and dreams, without reality, truth, or constancy. For first there is a strong bond of affection between us and our parents; yet how easily dissolved? We betake ourselves to a woman, forgetting our mother in a wife, and the womb that bare us in that which shall bear our image. This woman blessing us with children, our affection leaves the level it held before, and sinks from our bed unto our issue and picture of posterity: where affection holds no steady mansion; they growing up in years, desire our ends; or, applying themselves to a woman, take a lawful way to love another better than ourselves. Thus I perceive a man may be buried alive, and behold his grave in his own issue.

I conclude therefore, and say, there is no happiness under (or, as Copernicus* will have it, above) the sun; nor any *crambo*[5] in that repeated verity and burthen of all the wisdom of Solomon; "All is vanity and vexation of spirit;" there is no felicity in that the world adores. Aristotle, whilst he labours to refute the *ideas* of Plato,[6] falls upon one himself: for his

* Who holds that the sun is the centre of the world.* —*MS. W.*

4 *loves*] *Edts.* 1642 and 1643 read, *lives.*

All the *MSS.* and the later *Edts.* read, *loves:* with which reading the foreign editions agree.

In this instance then it is clear that the translator detected an errour which had not only passed through the two surreptitious editions, but was repeated by the author in the first genuine edition. —*Ed.*

* *who holds &c.*] An opinion which Sir Thomas Browne would by no means adopt; as has already appeared, and will be noticed again in another place.—*Ed.*

5 *nor any crambo in that repeated verity &c.*] Meaning that the sentiment expressed by Solomon is a truth which cannot be too often repeated.

Crambo is a play in rhyming, in which he that repeats a word that was said before forfeits something.—*Crabb's Techn. Dict.*

In all the *MSS.* and *Edts.* 1642 the words *nor any crambo* are wanting —*Ed.*

6 *Aristotle, whilst &c.*] Vid. *Eudemior.* l. i, c. 8, et *Metaphys.* l. i, c. 7. —*M.*

summum bonum[7] is a chimæra; and there is no such thing as his felicity. That wherein God himself is happy, the holy angels are happy, in whose defect the devils are unhappy;—that dare I call happiness: whatsoever conduceth unto this, may, with an easy metaphor, deserve that name; whatsoever else the world terms happiness is, to me, a story out of Pliny,[8] an apparition or neat delusion, wherein there is no more of happiness than the name. Bless me in this life with but the peace of my conscience, command of my affections, the love of thyself and[9] my dearest friends, and I shall be happy enough to pity Cæsar! These are, O Lord, the humble desires of my most reasonable ambition, and all I dare call happiness on earth:[1] wherein I set no rule or limit to thy hand or providence; dispose of me according to the wisdom[2] of thy pleasure. Thy will be done, though in my own undoing.[3]

7 *his* summum bonum] Vid. *Eudemior.* l. i, et ii.—et *De Moribus*, l. i, c. 7, 8, 9, et seq.—*M.*

8 *out of Pliny,*] These words are not in *MS. W.* nor *Edts.* 1642.—*Ed.*

9 *thyself and*] Not in *MSS.* nor *Edts.* 1642.—*Ed.*

1 *These are, O Lord, the humble desires &c.*] All the *MSS.* and *Edts.* 1642 read, "These are, O Lord, happiness on earth."—*Ed.*

2 *wisdom*] All the *MSS.* and *Edts.* 1642 read, *justice.*—*Ed.*

3 *Thy will &c.*] This concluding sentence is not in *MSS. W.* 2. & *R. MS. W.* and *Edts.* 1642 read, "Thy will be done, though in mine own damnation."—*Ed.*

The OBSERVATIONS ON RELIGIO MEDICI, which occupy the following pages, were communicated by SIR KENELM DIGBY (during his confinement in Winchester House) to the Earl of Dorset. While they were in the press, a correspondence respecting them took place between the author and Sir Thomas Browne, in which it appears to have been Sir Thomas's object to induce Sir Kenelm Digby to delay the publication of his Observations, which were on the *surreptitious* edition, till the appearance of the *genuine* one should have enabled him to revise them. That correspondence, together with an anonymous notice on the same subject, were printed at the end of the edition of 1643. In the subsequent editions they precede Religio Medici; an arrangement which has in the present been preferred.—*Ed.*

OBSERVATIONS.

To the Right Honourable Edward Earl of Dorset, Baron of Buckhurst, &c.

My Lord,

I received yesternight, your lordship's of the nineteenth current; wherein you are pleased to oblige me, not only by extreme gallant expressions of favour and kindness, but likewise by taking so far into your care the expending of my time, during the tediousness of my restraint, as to recommend to my reading a book that had received the honour and safeguard of your approbation; for both which I most humbly thank your lordship. And, since I cannot in the way of gratefulness express unto your lordship, as I would, those hearty sentiments I have of your goodness to me, I will at the least endeavour, in the way of duty and observance, to let you see how the little needle of my soul is thoroughly touched at the great loadstone of yours, and followeth suddenly and strongly, which way soever you beckon it. In this occasion, the magnetick motion was impatience to have the book in my hands, that your lordship gave so advantageous a character of; whereupon I sent presently (as late as it was) to Paul's church yard, for this favourite of yours, Religio Medici: which after a while found me in a condition fit to receive a blessing by a visit from any of such master-pieces, as you look upon with gracious eyes; —for I was newly gotten into bed. This good natured creature I could easily persuade to be my bed-fellow, and to wake with

me, as long as I had any edge to entertain myself with the delights I sucked from so noble a conversation. And truly, my lord, I closed not my eyes, till I had enriched myself with, (or at least exactly surveyed) all the treasures that are lapped up in the folds of those few sheets. To return only a general commendation of this curious piece, or at large to admire the author's spirit and smartness, were too perfunctory an account, and too slight an one, to so discerning and steady an eye as yours, after so particular and encharged a summons to read heedfully this discourse. I will therefore presume to blot a sheet or two of paper with my reflections upon sundry passages through the whole context of it, as they shall occur to my remembrance. Whereas now your lordship knoweth this packet is not so happy as to carry with it any other expression of my obsequiousness to you, it will be but reasonable, you should even here give over your further trouble, of reading what my respect engageth me to the writing of.

Whose first step is ingenuity and a well natured evenness of judgement, shall be sure of applause and fair hopes in all men for the rest of his journey. And indeed, my lord, methinketh this gentleman setteth out excellently poised with that happy temper: and sheweth a great deal of judicious piety in making a right use of the blind zeal that bigots lose themselves in. Yet I cannot satisfy my doubts thoroughly, how he maketh good his professing to follow the great wheel of the church[6] in matters of divinity; which surely is the solid basis of true religion. For to do so, without jarring against the conduct of that first mover by eccentrical and irregular motions, obligeth one to yield a very dutiful obedience to the determinations of it, without arrogating to one's self a controling ability in liking or misliking the faith, doctrine, and constitutions, of that church which one looketh upon as their north-star: whereas, if I mistake not, this author approveth the church of England, not absolutely, but comparatively with other reformed churches.

My next reflection is, concerning what he hath sprinkled (most wittily) in several places, concerning the nature and im-

6 The numerals which occur throughout these "Observations" indicate the Sections in "Religio Medici" referred to. —*Ed.*

mortality of a human soul, and the condition and state it is in, after the dissolution of the body. And here give me leave to observe what our countryman Roger Bacon did long ago: "That those students, who busy themselves much with such notions, as reside wholly in the fantasy, do hardly ever become idoneous for abstracted metaphysical speculations, the one having bulky foundation of matter, or of the accidents of it, to settle upon, (at the least, with one foot:) the other flying continually, even to a lessening pitch, in the subtile air. And accordingly, it hath been generally noted, that the exactest mathematicians, who converse altogether with lines, figures, and other differences of quantity, have seldom proved eminent in metaphysicks, or speculative divinity. Nor again, the professors of these sciences, in the other arts. Much less can it be expected that an excellent physician, whose fancy is always fraught with the material drugs that he prescribeth his apothecary to compound his medicines of, and whose hands are inured to the cutting up, and eyes to the inspection of anatomized bodies, should easily, and with success, fly his thoughts at so towering a game, as a pure intellect, a separated and unbodied soul."[7] Surely this acute author's sharp wit, had he orderly applied his studies that way, would have been able to satisfy himself with less labour, and others with more plenitude, than it hath been the lot of so dull a brain, as mine, concerning the immortality of the soul.[7] And yet, I assure you, my lord, the little philosophy that is allowed me for my share, demonstrateth this proposition to me, as well as faith delivereth it, which our physician will not admit in his.

To make good this assertion here, were very unreasonable, since that to do it exactly (and without exactness it were no demonstration) requireth a total survey of the whole science of bodies, and of all the operations that we are conversant with, of a rational creature: which I having done with all the succinctness I have been able to explicate so knotty a subject with, hath taken me up in the first draught near two hundred sheets of paper.* I shall therefore take leave of this point, with only this note:—that I take the immortality of the soul (under

* *which I having done &c.*] He refers to his *Two Treatises concerning the Body and Soul of Man*, which he published soon after:—*Paris*, 1644, fol.—*Ed.*

his favour) to be of that nature, that to them only that are not versed in the ways of proving it by reason, it is an article of faith: to others, it is an evident conclusion of demonstrative science.

And with a like short note, I shall observe, how if he had traced the nature of the soul from its first principles, he could not have suspected it should sleep in the grave, till the resurrection of the body.[7] Nor would he have permitted his compassionative nature to imagine it belonged to God's mercy[7] (as the Chiliasts did) to change its condition, in those that are damned, from pain to happiness. For where God should have done that, he must have made that anguished soul another creature than what it was (as to make fire cease from being hot, requireth to have it become another thing than the element of fire;) since, that to be in such a condition as maketh us understand damned souls miserable, is a necessary effect of the temper it is in, when it goeth out of the body, and must necessarily (out of its own nature) remain in, unvariably for all eternity; though, for the conceptions of the vulgar part of mankind, (who are not capable of such abstruse notions) it be styled, (and truly too) the sentence and punishment of a severe judge.

I am extremely pleased with him, when he saith,[9] "there are not impossibilities enough in religion for an active faith."* And no whit less, when in philosophy he will not be satisfied with such naked terms, as in schools used to be obtruded upon easy minds, when the masters' fingers are not strong

* *I am extremely pleased, &c.*] "Sir Kenelm, a Roman Catholic, was, 'extremely pleased,' without question,—and full of hopes, that this young author might at last *unreason* himself into *implicit belief*, and go over to a church, which would feed his hungry faith with a sufficient quantity of impossibilities.—*Tendimus in Latium!* Tillotson (on the other hand) judging that the papists would make an ill use of this, and such passages as this, in protestant writers, was willing to pass a gentle animadversion upon it, in the following passage:—'I know not what some men may find in themselves; but I must freely acknowledge, that I could never yet attain to that bold and hardy degree of faith, as to believe any thing, for this reason, because it was impossible.—So that I am very far from being of *his* mind, that wanted, not only more difficulties, but even impossibilities in the christian religion, to exercise his faith upon.'

"But, by *impossibilities*, Sir Thomas Browne, as well as Tertullian, meant *seeming* not *real* impossibilities; and what he says should be looked upon as a *verbum ardens*, a rhetorical flourish, and a trial of skill with Tertullian, in which however he had little chance to come off superiour. Both of them were lively and ingenious, but the *African* had a warmer complexion than the *Briton*."—*Jortin's Tracts*, vol. i, p. 373.—*Ed.*

enough to untie the knots proposed unto them. I confess, when I inquire what light (to use our author's example[10]) is, I should be as well contented with his silence, as with his telling me it is *actus perspicui*;* unless he explicate clearly to me, what those words mean, which I find very few go about to do. Such meat they swallow whole, and eject it as entire. But were such things scientifically and methodically declared, they would be of extreme satisfaction and delight. And that work taketh up the greatest part of my formerly mentioned treatise. For I endeavour to shew by a continued progress, and not by leaps, all the motions of nature; and unto them to fit intelligibly the terms used by her best secretaries; whereby all wild fantastick qualities and moods (introduced for refuges of ignorance) are banished from my commerce.

In the next place, my lord, I shall suspect that our author hath not penetrated into the bottom of those conceptions, that deep scholars have taught us of eternity.[11] Methinketh† he taketh it for an infinite extension of time, and a never-ending revolution of continual succession; which is no more like eternity, than a gross body is like to a pure spirit. Nay, such an infinity of revolutions is demonstrable to be a contradiction, and impossible. In the state of eternity there is no succession, no change, no variety. Souls or angels, in that condition, do not so much as change a thought. All things, notions, and actions, that ever were, are, or shall be, in any creature, are actually present to such an intellect. And this, my lord, I aver, not as deriving it from theology, and having recourse to beatifick vision, to make good my tenet, (for so, only glorified creatures should enjoy such immense knowledge) but out of the principles of nature and reason, and from thence shall demonstrate it to belong to the lowest soul of the ignorantest wretch whilst he lived in this world, since damned in hell. A bold undertaking, you will say. But I confidently engage myself to it.

* *I confess, &c.*] The *words* of Sir Kenelm imply that Sir Thomas had adopted the Aristotelian definition of light, *actus perspicui*, which is not the fact. Sir K. probably *intended* to express his accordance with Sir Thomas in *rejecting* it.—*Ed.*

† *Methinketh &c.*] The opinions which Sir Thomas expresses respecting eternity, are the very opposite to those here attributed to him.

The author of the anonymous notice, prefixed to *Religio Medici*, justly complains, that Sir Kenelm, "wherein he would contradict, mistaketh or traduceth the intention."—*Ed.*

Upon this occasion occurreth also a great deal to be said of the nature of predestination, (which, by the short touches our author giveth of it, I doubt he quite mistakes) and how it is an unalterable series and chain of causes, producing infallible (and in respect of them, necessary) effects. But that is too large a theme to unfold here; too vast an ocean to describe in the scant map of a letter. And therefore I will refer that to a fitter opportunity, fearing I have already too much trespassed upon your lordship's patience; but that indeed, I hope, you have not had enough to read thus far.

I am sure, my lord, that you (who never forgot any thing which deserved a room in your memory) do remember how we are told, that *abyssus abyssum invocat.* So here our author, from the abyss of predestination, falleth into that of the trinity of persons consistent with the indivisibility of the divine nature:[12] and out of that (if I be not exceedingly deceived) into a third, of mistaking, when he goeth about to illustrate this admirable mystery by a wild discourse of a trinity in our souls. The dint of wit is not forcible enough to dissect such tough matter; wherein all the obscure glimmering we gain of that inaccessible light, cometh to us clothed in the dark weeds of negations, and therefore little can we hope to meet with any positive examples to parallel it withal.

I doubt, he also mistaketh, and imposeth upon the severer schools, when he intimateth, that they gainsay this visible world's being but a picture or shadow of the invisible and intellectual: which manner of philosophizing he attributeth to Hermes Trismegistus;[12] but is every where to be met with in Plato; and is raised since to a greater height in the christian schools.

But I am sure he learned in no great school,[13] nor sucked from any good philosophy, to give an actual subsistence and being to first matter without a form.* He that will allow that a real existence in nature, is as superficially tincted in metaphysicks, as another would be in mathematicks, that should allow the like to a point, a line, or a superficies, in figures. These, in their strict notions, are but negations of further ex-

* *But I am sure &c.*] Yet did Sir Thomas, in the words alluded to, quote from the Bible: "And the earth was without form."—*Ed.*

tension, or but exact terminations of that quantity which falleth under the consideration of the understanding, in the present purpose; no real entities in themselves. So likewise, the notions of matter, form, act, power, existence, and the like, that are with truth considered by the understanding, and have there each of them a distinct entity, are nevertheless no where by themselves in nature. They are terms which we must use in the negociations of our thoughts, if we will discourse consequently, and conclude knowingly. But then again, we must be very wary of attributing to things, in their own natures, such entities as we create in our understandings, when we make pictures of them there; for there every different consideration, arising out of the different impression which the same thing maketh upon us, hath a distinct being by itself: whereas in the thing, there is but one single unity, that sheweth (as it were in a glass, at several positions) those various faces in our understanding. In a word, all these words are but artificial terms, not real things. And the not right understanding them, is the dangerousest rock that scholars suffer shipwreck against.

I go on with our physician's contemplations. Upon every occasion, he sheweth strong parts, and a vigorous brain. His wishes and aims, and what he pointeth at, speak him owner of a noble and a generous heart. He hath reason to wish that Aristotle had been as accurate in examining the causes, nature, and affections, of the great universe he busied himself about, as his patriarch Galen hath been in the like considerations upon his little world, man's body, in that admirable work of his *De usu partium.*[14] But no great human thing was ever born and perfected at once. It may satisfy us, if one in our age buildeth that magnificent structure upon the other's foundations; and especially, if where he findeth any of them unsound, he eradicateth those, and fixeth new unquestionable ones in their room: but so, as they still engross, keep a proportion, and bear a harmony, with the other's great work. This hath now (even now) our learned countryman done, the knowing Master White,* (whose name, I believe,

* *The knowing Master White,*] An English Roman Catholic priest; whose name was Thomas White, but who assumed, on various occasions, those of Candidus,

your lordship hath met withal) in his excellent book, *De mundo*, newly printed at Paris, where he now resideth, and is admired by the world of lettered men there, as the prodigy of these latter times. Indeed his three dialogues upon that subject, (if I am able to judge any thing) are full of the profoundest learning I ever yet met withal. And I believe, who hath well read and digested them, will persuade himself, there is no truth so abstruse, nor hitherto conceived out of our reach, but man's wit may raise engines to scale and conquer. I assure myself, when our author hath studied him thoroughly, he will not lament so loud for Aristotle's mutilated and defective philosophy, as, in Boccalini, Cæsar Caporali doth for the loss of Livy's shipwrecked decads.

That logick which he quarrelleth at, for calling a toad or a serpent ugly,[16] will in the end agree with his; for nobody ever took them to be so, in respect of the universe, (in which regard, he defendeth their regularity and symmetry) but only as they have relation to us.

But I cannot so easily agree with him, when he affirmeth, that devils, or other spirits in the intellectual world, have no exact ephemerides,[17] wherein they may read beforehand the stories of fortuite accidents. For I believe, that all causes are so immediately chained to their effects, as if a perfect knowing nature get hold but of one link, it will drive the en-

Albius, Bianche, Rickworth, and Anglus. Moreri calls him, "Thomas de Withe, second fils de Richarde de Withe, originaire de Hutton, dans le comté d'Essex, en Angleterre." He became successively principal of a college at Lisbon, and subprincipal at Douay. During some period of his life he resided with Sir Kenelm Digby, whose Aristotelean notions he zealously adopted,—and by whom therefore he is very naturally introduced to Sir Thomas as "the *knowing* Master White." These notions, however, he not only applied to philosophy but attempted to carry them into theological subjects, to the great scandal of his church; by whom several of his works were condemned. Descartes, who called him M. Vitus, endeavoured in vain to induce him to adopt his system. Bayle says of him;—"Il avait l'esprit assez pénétrant et assez vaste; mais il n'était pas heureux à discerner les idées qui méritaient de servir de règle et de fondement, ni à développer les matières." Baillet accuses him of obscurity equal to that of the ancient oracles: his reply is curious; —"These learned persons," says he, "either understand me or they do not:—if they understand me, let them refute my opinions; if not, why do they complain of them?" He resided long abroad, at Paris and at Rome, but spent the close of his life in England, where he became acquainted with Hobbes, and where, (in 1676) he died at the advanced age of 94. His works were numerous; among the principal may be mentioned, his Dialogues *De Mundo; Institutiones Peripateticæ; Appendix Theologica de Origine Mundi; Tabulæ Suffragiales de Terminandis Fidei Litibus ab Ecclesia Catholica Fixæ; Tesseræ Romanæ Evulgatio; Statera Morum; De Media Animarum Statu; Sonus Buccinæ*, etc.—*Ed.*

tire series, or pedigree of the whole, to each utmost end (as I think I have proved in my forenamed treatise;) so that in truth, there is no fortuiteness or contingency of things, in respect of themselves, but only in respect of us, that are ignorant of their certain and necessary causes.*

Now a like series or chain and complex of all outward circumstances, (whose highest link, poets say prettily, is fastened to Jupiter's chair, and the lowest is rivetted to every individual on earth) steered and levelled by God Almighty, at the first setting out of the first mover, I conceive, to be that divine providence and mercy, which (to use our author's own example) giveth a thriving genius to the Hollanders, and the like: and not any secret, invisible, mystical blessing, that falleth not under the search or cognizance of a prudent indagation.

I must needs approve our author's equanimity, and I may as justly say his magnanimity, in being contented so cheerfully (as he saith) to shake hands with the fading goods of fortune, and be deprived of the joys of her most precious blessings; so that he may in recompense possess in ample measure the true ones of the mind.[18] Like Epictetus, that great master of moral wisdom and piety, who taxeth them of high injustice, that repine at God's distribution of his blessings, when he putteth not into their share of goods such things as they use no industry or means to purchase. For why should that man, who above all things esteemeth his own freedom, and who, to enjoy that, sequestreth himself from commerce with the vulgar of mankind, take it ill of his stars, if such preferments, honours, and applauses, meet not him, as are painfully gained, after long and tedious services of princes, and brittle dependences of humorous favourites, and supple compliances with all sorts of natures? As for what he saith of astrology,[18] I do not conceive that wise men reject it so much for being repugnant to divinity (which he reconcileth well enough) as for having no solid rules or ground in nature. To rely too far upon that

* *But I cannot so easily agree with him, &c.*] Sir Kenelm, in his reply, does not discuss the point at issue; which is, not, whether there be any "contingency of things, in respect of themselves"—but, whether devils or angels have such "exact ephemerides," or (to use Sir K's words) whether they are such "perfect knowing natures,"—as to foresee future events.—*Ed.*

vain art I judge to be rather folly than impiety, unless in our censure we look to the first origin of it, which savoureth of the idolatry of those heathens, that, worshipping the stars and heavenly bodies for deities, did in a superstitious devotion attribute unto them the causality of all effects beneath them. And for aught I know, the belief of solid orbs in the heavens, and their regularly-irregular motions, sprang from the same root. And a like inanity I should suspect in chiromancy, as well as astrology, (especially, in particular contingent effects) however our author, and no less a man than Aristotle, seem to attribute somewhat more to that conjectural art of lines.

I should much doubt (though our author sheweth himself of another mind[20]) that Bernardinus Ochinus grew at the last to be a mere atheist; when after having been first the institutor and patriarch of the Capucine order (so violent was his zeal then, as no former religious institution, though never so rigorous, was strict enough for him) he from thence fell to be first an heretick, then a Jew, and after a while became a Turk; and at the last wrote a furious invective against those, whom he called the three grand impostors of the world, among whom he ranked our Saviour Christ, as well as Moses and Mahomet.*

I doubt he mistakes in his chronology, or the printer in the name, when he maketh Ptolemy condemn the Alcoran.†[23]

He needeth not be so scrupulous, as he seemeth to be, in averring downrightly, that God cannot do contradictory things[27] (though peradventure it is not amiss to sweeten the manner of the expression and the sound of the words); for who understandeth the nature of contradiction will find nonentity in one of the terms, which of God were impiety not to deny peremptorily. For he being in his proper nature self-entity, all being must immediately flow from him, and all not-being be totally excluded from that efflux. Now for the recalling of

* This story I have but upon relation, yet of a very good hand.

† *I doubt he mistakes &c.*] There is an entire line omitted in the surreptitious edition, which Sir Kenelm used, and which follows the reading of *MS. W.*, "and cannot but commend the judgement of Ptolemy, that thought the Alcoran is an ill-composed piece." The correct reading is, "and cannot but commend the judgement of Ptolemy, that thought *not his library complete without it.* (meaning without *the Scriptures.*) The Alcoran is an ill-composed piece, &c."—*Ed.*

time past, which the angels posed Esdras withal;[27] there is no contradiction in that, as is evident to them that know the essence of time. For it is but putting again all things that had motion into the same state they were in, at that moment unto which time was to be reduced back, and from thence letting it travel on again by the same motions, and upon the same wheels it rolled upon before. And therefore God could do this admirable work, though neither Esdras, nor all the power of creatures together could do it: and consequently it cannot in this question be said, that he posed mortality with what himself was not able to perform.*

I acknowledge ingenuously, our physician's experience hath the advantage of my philosophy, in knowing there are witches.[30] Yet I am sure I have no temptation to doubt of the Deity; nor have any unsatisfaction in believing there are spirits. I do not see such a necessary conjunction between them, as that the supposition of the one must needs infer the other. Neither do I deny there are witches. I only reserve my assent, till I meet with stronger motives to carry it. And I confess I doubt as much of the efficacy of those magical rules he speaketh of, as also of the finding out of mysteries by the courteous revelation of spirits.[31]

I doubt his discourse of an universal spirit is but a wild fancy; and that in the marshaling of it, he mistaketh the Hermetical philosophers. And surely, it is a weak argument from a common nature, that subsisteth only in our understanding, (out of which it hath no being at all,)[32] to infer, by parity, an actual subsistence of the like in reality of nature; of which kind of miscarriage in men's discoursings, I have spoken before. And, upon this occasion, I do not see how seasonably he falleth of a sudden from natural speculation, to a moral contemplation of God's spirit working in us.[32] In which also I would inquire, (especially upon his sudden poetical rapture,) whether the solidity of the judgement be not outweighed by the airiness of the fancy. Assuredly one cannot err in taking

* *Now for the recalling of time past, &c.*] See 2 *Esdras*, iv, 5. Here again, Sir Kenelm has misunderstood the passage referred to. Sir Thomas neither asserts that the "recalling of time" involves "a contradiction,"—nor that God "posed mortality with what he was not able to perform." His remarks imply directly the reverse.—*Ed.*

this author for a very fine ingenious gentleman: but for how deep a scholar, I leave unto them to judge, that are abler than I am.

If he had applied himself with earnest study, and upon right grounds, to search out the nature of pure intellects, I doubt not but his great parts would have argued more efficaciously, than he doth against those, that between men and angels put only Porphyry's difference, of mortality and immortality.[33] And he would have dived further into the tenour of their intellectual operations; in which there is no succession, nor ratiocinative discourse; for in the very first instant of their creation, they actually knew all that they were capable of knowing, and they are acquainted even with all free thoughts, past, present, and to come; for they see them in their causes, and they see them all together at one instant; as I have in my fore-mentioned treatise proved at large: and I think I have already touched thus much once before in this letter.

I am tempted here to say a great deal concerning light, by his taking it to be a bare quality.[33] For, in physicks, no speculation is more useful, or reacheth further. But to set down such phenomena of it as I have observed, and from whence I evidently collect the nature of it, were too large a theme for this place. When your Lordship pleaseth, I shall shew you another more orderly discourse upon that subject, wherein I have sufficiently proved it to be a solid substance and body.*

In his proceeding to collect an intellectual world, and in his discoursing upon the place and habitation of angels;[35] as also in his consideration of the activity of glorified eyes, which shall be in a state of rest, whereas motion is required to seeing; and in his subtile speculation upon two bodies, placed in the vacuity,[49] beyond the utmost all-enclosing superficies of heaven, (which implieth a contradiction in nature,) methinks I hear Apelles crying out, *Ne sutor ultra crepidam:* or rather, it putteth me in mind of one of the titles in Pantagruel's library, (which he expresseth himself conversant in,) namely, *Quæstio*

* *Another more orderly discourse &c.*] in the *Treatise on the nature of Bodies*, There are several chapters on the subject 4to. Lond. 1645.—*Ed.*

subtilissima, utrum chimæra in vacuo bombinans possit comedere secundas intentiones; with which short note I will leave these considerations; in which, (if time, and other circumstances allowed it,) matter would spring up of excellent learning.

When our author shall have read Master White's Dialogues of the World, he will no longer be of the opinion, that the unity of the world is a conclusion of faith.[35] For it is there demonstrated by reason.

Here the thread of the discourse[36] inviteth me to say a great deal of the production or creation of man's soul. But it is too tedious and too knotty a piece for a letter. Now it shall suffice to note, that it is not *ex traduce*, and yet hath a strange kind of near dependence on the body, which is, as it were, God's instrument to create it by. This, thus said, or rather tumbled out, may seem harsh. But had your Lordship leisure to peruse what I have written at full upon this point, I doubt not but it would appear plausible enough to you.

I cannot agree with him, when he seemeth to impute inconvenience to long life, and that length of time doth rather impair than improve us:[42] for surely if we will follow the course of nature and of reason, it is a mighty great blessing; were it but in this regard, that it giveth time leave to vent and boil away the unquietnesses and turbulencies that follow our passions, and to wean ourselves gently from carnal affections, and at the last to drop with ease and willingness, like ripe fruit from the tree; as I remember Plotinus finely discourseth in one of his Æneids. For when before the season, it is plucked off with violent hands, or shaken down by rude and boisterous winds, it carrieth along with it an indigested raw taste of the wood, and hath an unpleasant aigreness in its juice, that maketh it unfit for use, till long time hath mellowed it. And peradventure it may be so backward, as, instead of ripening, it may grow rotten in the very centre. In like manner, souls that go out of their bodies, with affections to those objects they leave behind them, (which usually is as long as they can relish them,) do retain still, even in their separation, a bias, and a languishing towards them; which is the reason why such terrene souls appear oftenest in cemeteries and charnel-

houses,[37] and not that moral one which our author giveth.* For life, which is union with the body, being that which carnal souls have straitest affection to, and that they are loathest to be separated from; their unquiet spirit, which can never (naturally) lose the impressions it had wrought in it at the time of its driving out, lingereth perpetually after that dear consort of his. The impossibility cannot cure them of their impotent desires; they would fain be alive again,

——iterumque ad tarda reverti
Corpora. Quæ lucis miseris tam dira cupido?

And to this cause peradventure may be reduced the strange effect which is frequently seen in England, when, at the approach of the murderer, the slain body suddenly bleedeth afresh. For, certainly, the souls of them that are treacherously murdered by surprize, used to leave their bodies with extreme unwillingness, and with vehement indignation against them that force them to so unprovided and abhorred a passage. That soul then, to wreak its evil talent against the hated murderer, and to draw a just and desired revenge upon his head, would do all it can to manifest the author of the fact. To speak it cannot, for in itself it wanteth organs of voice; and those it is parted from are now grown too heavy, and are too benumbed for it to give motion unto. Yet some change it desireth to make in the body, which it hath so vehement inclinations to, and therefore is the aptest for it to work upon. It must then endeavour to cause a motion in the subtilest and most fluid parts (and consequently the most moveable ones) of it. This can be nothing but the blood, which then, being violently moved, must needs gush out at those places where it findeth issues.†

* *In like manner, &c.*] Alexander Ross attacks our critick's speculations about *terrene* souls, with most quaint arguments. "If souls," quoth he, "after death appear, it must be either in their own, or in other bodies; for else they must be invisible: if in their own, then they must pass through the grave, and enter into their cold and inorganical bodies, and add more strength to them than ever they had, to get out from under such a load of earth and rubbish: if in other bodies, then the end of its creation is overthrown; for it was made to inform its own body, to which only it hath relation, and to no other; and so we must acknowledge a *Pythagorical transanimation.*—Such apparitions are delusions of *Satan*, and *monkish* tricks, to confirm superstition."—*Ed.*

† *And to this cause &c.*] Here again we cannot refrain for inserting Alexander Ross. Far from questioning the fact, he only finds fault with Sir Kenelm's mode of accounting for it:—viz. that the bleed-

Our author cannot believe, that the world will perish upon the ruins of its own principles.[45] But Master White hath demonstrated the end of it upon natural reason. And though the precise time for that general destruction be inscrutable; yet he learnedly sheweth an ingenious rule, whereby to measure in some sort the duration of it, without being branded (as our author threateneth) with convincible and statute-madness,[46] or with impiety. And whereas he will have the work of this last great day (the summer-up of all past days) to imply annihilation,[45] and thereupon interesteth God only in it: I must beg leave to contradict him, namely in this point; and to affirm, that the letting loose then of the activest element, to destroy this face of the world, will but beget a change in it; and that no annihilation can proceed from God Almighty: for his essence being (as I said before) self-existence, it is more impossible that not-being should flow from him, than that cold should flow immediately from fire, or darkness from the actual presence of light.

I must needs acknowledge, that where he balanceth life and death against one another, and considereth that the latter is to be a kind of nothing for a moment, to become a pure spirit within one instant,[38] and what followeth of this strong thought, is extreme handsomely said, and argueth very gallant and generous resolutions in him.

To exemplify the immortality of the soul, he needeth not have recourse to the philosopher's stone.[39] His own store furnisheth him with a most pregnant one of reviving a plant (the same numerical plant) out of its own ashes.[48] But, under his favour, I believe his experiment will fail, if, under the notion of the same, he comprehendeth all the accidents that first

ing of a slain body at the approach of the murderer, is *caused by the soul.* "But this cannot be," says Ross, "for the soul, when it is in the body, cannot make it bleed when it would; if it could, we should not need *chirurgeons* to *phlebotomise* and scarify us: much less then can it, being separated from the body. If any such bleeding be, as I believe that sometimes there hath been, and may be so again, I think it the effect rather of a miracle, to manifest the murderer, than any natural cause: for I have read, that a man's arm, which was kept two years did, at the sight of the murderer, drop with blood; which could not be naturally, seeing it could not but be withered and dry after so long time. Yet I deny not but, before the body be cold, or the spirits quite gone, it may bleed; some impressions of revenge and anger being left in the spirits remaining, which may move the blood; but the safest way is, to attribute such motions of the blood to the prayers of these *souls* under the altar, saying, *Quousque, Domine?*"—*Ed.*

accompanied that plant; for, since in the ashes there remaineth only the fixed salt, I am very confident, that all the colour, and much of the odour and taste of it, is flown away with the volatile salt.

What should I say of his making so particular a narration of personal things, and private thoughts of his own?—the knowledge whereof cannot much conduce to any man's betterment; which I make account is the chief end of his writing this discourse. As where he speaketh of the soundness of his body, of the course of his diet, of the coolness of his blood at the summer-solstice of his age, of his neglect of an epitaph; how long he hath lived, or may live; what popes, emperours, kings, grand signiors, he hath been contemporary unto, and the like:[41] would it not be thought that he hath a special good opinion of himself, (and indeed he hath reason,) when he maketh such great princes the land-marks in the chronology of himself? Surely if he were to write by retail the particulars of his own story and life, it would be a notable romance, since he telleth us in one total sum, it is a continued miracle of thirty years.* Though he creepeth gently upon us at the first, yet he groweth a giant, an Atlas (to use his own expression) at the last. But I will not censure him, as he that made notes upon Balsac's Letters, and was angry with him for vexing his readers with stories of his colicks, and voiding of gravel. I leave this kind of his expressions, without looking further into them.

In the next place, my Lord, I shall take occasion,—from our author's setting so main a difference between moral honesty and virtue, or being virtuous (to use his own phrase) out of an inbred loyalty to virtue,[47] and on the other side, being virtuous for a reward's sake,—to discourse a little concerning virtue in this life, and the effects of it afterwards. Truly, my Lord, however he seemeth to prefer this latter, I cannot but value the other much before it, if we regard the nobleness and heroickness of the nature and mind from whence they both proceed: and if we consider the journey's end, to which each of them carrieth us, I am confident the first yieldeth nothing to

* Part ii, sect. 2.

the second, but indeed both meet in the period of beatitude. To clear this point, (which is very well worth the wisest man's seriousest thoughts,) we must consider, what it is that bringeth us to this excellent state, to be happy in the other world of eternity and immutability. It is agreed on all hands to be God's grace and favour to us: but all do not agree by what steps his grace produceth this effect. Herein I shall not trouble your Lordship with a long discourse, how that grace worketh in us, (which yet I will in a word touch anon, that you may conceive what I understand grace to be,) but will suppose it to have wrought its effect in us in this life, and from thence examine what hinges they are that turn us over to beatitude and glory in the next. Some consider God as a judge, that rewardeth or punisheth men, according as they co-operated with, or repugned to, the grace he gave. That according as their actions please or displease him, he is well affected towards them, or angry with them; and accordingly maketh them, to the purpose, and very home, feel the effects of his kindness or indignation. Others that fly a higher pitch, and are so happy,

——ut rerum poterint cognoscere causas,

do conceive that beatitude and misery in the other life are effects that necessarily and ordinarily flow out of the nature of those causes that begot them in this life, without engaging God Almighty to give a sentence, and act the part of a judge, according to the state of our cause, as it shall appear upon the accusations and pleadings at his great bar. Much of which manner of expression is metaphorical, and rather adapted to contain vulgar minds in their duties, (that are awed with the thought of a severe judge sifting every minute action of theirs,) than such as we must conceive every circumstance to pass so in reality, as the literal sound of the words seems to infer in ordinary construction: (and yet all that is true too, in its genuine sense.) But, my Lord, these more penetrating men, and that, I conceive, are virtuous upon higher and stronger motives, (for they truly and solidly know why they are so,) do consider that what impressions are once made in the spiritual substance of a soul, and what affections it hath once contracted, do ever remain in it, till a contrary and dia-

metrally contradicting judgement and affection do obliterate it, and expel it thence. This is the reason why contrition, sorrow, and hatred for past sins, is encharged us. If then the soul do go out of the body with impressions and affections to the objects and pleasures of this life, it continually lingereth after them, and, as Virgil (learnedly as well as wittily) saith,

> ——— Quæ gratia currum
> Armorumque fuit vivis, quæ cura nitentes
> Pascere equos, eadem sequitur tellure repostos.

But that being a state wherein those objects neither are, nor can be enjoyed, it must needs follow, that such a soul must be in an exceeding anguish, sorrow, and affliction, for being deprived of them; and for want of those it so much prizeth, will neglect all other contentments it might have, as not having a relish or taste moulded and prepared to the savouring of them; but like feverish tongues, that when they are even scorched with heat, take no delight in the pleasingest liquors, but the sweetest drinks seem bitter to them, by reason of their overflowing gall: so they even hate whatsoever good is in their power, and thus pine away a long eternity. In which the sharpness and activity of their pain, anguish, and sad condition, is to be measured by the sensibleness of their natures: which being then purely spiritual, is in a manner infinitely more than any torment that in this life can be inflicted upon a dull gross body. To this add the vexation it must be to them, to see how inestimable and infinite a good they have lost; and lost merely by their own fault, and for momentary trifles, and children's play; and that it was so easy for them to have gained it, had they remained but in their right senses, and governed themselves according to reason. and then judge in what a tortured condition they must be, of remorse and execrating themselves for their most supine and senseless madness. But if on the other side, a soul be released out of this prison of clay and flesh, with affections settled upon intellectual goods, as truth, knowledge, and the like; and that it be grown to an irksome dislike of the flat pleasures of this world; and look upon carnal and sensual objects with a disdainful eye, as discerning the contemptible inanity in them, that is set off only by their painted outside; and above

all, that it have a longing desire to be in the society of that supereminent cause of causes, in which they know are heaped up the treasures of all beauty, knowledge, truth, delight, and good whatsoever: and therefore are impatient at the delay, and reckon all their absence from him, as a tedious banishment; and in that regard hate their life and body, as cause of this divorce: such a soul, I say, must necessarily, by reason of the temper it is wrought into, enjoy immediately at the instant of the body's dissolution, and its liberty, more contentment, more joy, more true happiness, than it is possible for a heart of flesh to have scarce any scantling of, much less to comprehend.

For immense knowledge is natural to it, as I have touched before. Truth which is the adequated and satisfying object of the understanding, is there displayed in her own colours, or rather without any.

And that which is the crown of all, and in respect of which all the rest is nothing; that infinite entity, which above all things this soul thirsteth to be united unto, cannot for his own goodness' sake deny his embraces to so affectionate a creature, and to such an enflamed love. If he should, then were that soul, for being the best, and for loving him most, condemned to be the unhappiest. For what joy could she have in any thing, were she barred from what she so infinitely loveth? But since the nature of superiour and excellent things is to shower down their propitious influences, wheresoever there is a capacity of receiving them, and no obstacle to keep them out, (like the sun that illuminateth the whole air, if no cloud or solid opacous body intervene,) it followeth clearly, that this infinite sun of justice, this immense ocean of goodness, cannot choose but environ with his beams, and replenish even beyond satiety with his delightsome waters, a soul so prepared and tempered to receive them.

Now, my Lord, to make use of this discourse, and apply it to what begot it,—be pleased to determine, which way will deliver us evenest and smoothest to this happy end of our journey: to be virtuous for hope of a reward, and through fear of punishment; or to be so out of a natural and inward affection to virtue, for virtue's and reason's sake? surely one in this latter condition, not only doth those things which will

bring him to beatitude, but he is so secured, in a manner, under an armour of proof, that he is almost invulnerable; he can scarce miscarry, he hath not so much as an inclination to work contrarily; the alluring baits of this world tempt him not; he disliketh, he hateth, even his necessary commerce with them whilst he liveth. On the other side, the hireling, that steereth his course only by his reward and punishment doth well, I confess; but he doth it with reluctance; he carrieth the ark, God's image, his soul, safely home, it is true, but he loweth pitifully after his calves, that he leaveth behind him among the Philistines. In a word, he is virtuous; but if he might safely, he would do vicious things. (And hence be the ground in nature, if so I might say, of our purgatory.) Methinks two such minds may not unfitly be compared to two maids, whereof one hath a little sprinkling of the green sickness, and hath more mind to eat ashes, chalk, or leather, than meats of solid and good nourishment, but forbeareth them, knowing the languishing condition of health it will bring her to; but the other having a ruddy, vigorous, and perfect constitution, and enjoying a complete, entire eucrasy, delights in no food but of good nouriture, and loathes the other's delights. Her health is discovered in her looks, and she is secure from any danger of that malady, whereas the other for all her good diet, beareth in her complexion some sickly testimony of her depraved appetite; and if she be not very wary, she is in danger of a relapse.

It falleth fit in this place to examine our author's apprehension of the end of such honest worthies and philosophers (as he calleth them)[54] that died before Christ his incarnation, whether any of them could be saved, or no? Truly, my Lord, I make no doubt at all, but if any followed in the whole tenour of their lives the dictamens of right reason, that their journey was secure to heaven. Out of the former discourse appeareth what temper of mind is necessary to get thither. And that reason would dictate such a temper to a perfectly judicious man, (though but in the state of nature,) as the best and most rational for him, I make no doubt at all. But it is most true, they are exceeding few (if any) in whom reason worketh clearly, and is not overswayed by passion and terrene af-

fections; they are few that can discern what is reasonable to be done in every circumstance.

> ——Pauci quos æquus amavit
> Jupiter, aut ardens evexit ad æthera virtus,
> Diis geniti, potuere.——

And fewer that, knowing what is best, can win of themselves to do accordingly, (*Video meliora proboque, deteriora sequor*, being most men's cases); so that after all that can be expected at the hands of nature and reason in their best habit, since the lapse of them, we may conclude it would have been a most difficult thing for any man, and a most impossible one for mankind, to attain unto beatitude, if Christ had not come to teach, and by his example to show us the way.

And this was the reason of his incarnation, teaching, life, and death. For, being God, we could not doubt his veracity, when he told us news of the other world; having all things in his power, and yet enjoying none of the delights of this life, no man should stick at foregoing them, since his example sheweth all men, that such a course is best, whereas few are capable of the reason of it: and for his last act, dying in such an afflicted manner, he taught us how the securest way to step immediately into perfect happiness, is to be crucified to all the desires, delights, and contentments, of this world.

But to come back to our physician: truly, my Lord, I must needs pay him, as a due, the acknowledging his pious discourses to be excellent and pathetical ones, containing worthy motives to incite one to virtue, and to deter one from vice; thereby to gain heaven, and to avoid hell. Assuredly he is owner of a solid head and of a strong generous heart. Where he employeth his thoughts upon such things as resort to no higher or more abstruse principles, than such as occur in ordinary conversation with the world, or in the common tract of study and learning, I know no man would say better. But when he meeteth with such difficulties as his next, concerning the resurrection of the body,[48] (wherein after deep meditation upon the most abstracted principles and speculations of the metaphysics, one hath much ado to solve the appearing contradictions in nature,) there, I do not at all wonder, he should tread a little awry, and go astray in the dark, for I conceive

his course of life hath not permitted him to allow much time unto the unwinding of such entangled and abstracted subtilties. But if it had, I believe his natural parts are such, as he might have kept the chair from most men I know; for even where he roveth widest, it is with so much wit and sharpness, as putteth me in mind of a great man's censure upon Joseph Scaliger's Cyclometrica, (a matter he was not well versed in,) that he had rather err so ingeniously as he did, than hit upon truth in that heavy manner, as the Jesuit his antagonist stuffeth his books. Most assuredly his wit and smartness in this discourse is of the finest standard; and his insight into severer learning will appear as piercing unto such as use not strictly the touchstone and the test, to examine every piece of the glittering coin he payeth his reader with. But to come to the resurrection. Methinks it is but a gross conception, to think that every atom of the present individual matter of a body, every grain of ashes of a burned cadaver, scattered by the wind througout the world, and, after numerous variations, changed paradventure into the body of another man, should at the sounding of the last trumpet be raked together again from all the corners of the earth, and be made up anew into the same body it was before of the first man. Yet if we will be christians and rely upon God's promises, we must believe that we shall rise again with the same body that walked about, did eat, drink, and live, here on earth; and that we shall see our Saviour and Redeemer, with the same, the very same eyes, wherewith we now look upon the fading glories of this contemptible world.

How shall these seeming contrarieties be reconciled? If the latter be true, why should not the former be admitted? To explicate this riddle the better, give me leave to ask your Lordship, if you now see the cannons, the ensigns, the arms, and other martial preparations at Oxford, with the same eyes, wherewith many years agone you looked upon Porphyry's and Aristotle's learned leases there? I doubt not but you will answer me, assuredly with the very same. Is that noble and graceful person of yours, that begetteth both delight and reverence in every one that looketh upon it,—is that body of yours, that now is grown to such comely and full dimensions,

as nature can give her none more advantageous,—the same person, the same body, which your virtuous and excellent mother bore nine months in her chaste and honoured womb, and that your nurse gave suck unto? Most certainly it is the same. And yet if you consider it well, it cannot be doubted, but that sublunary matter, being in a perpetual flux, and in bodies which have internal principles of heat and motion, much continually transpiring out to make room for the supply of new aliment; at the length, in long process of time, all is so changed, as that ship at Athens may as well be called the same ship that was there two hundred years before, and whereof (by reason of the continual reparations) not one foot of the timber is remaining in her that builded her at first, as this body now can be called the same, was forty years agone, unless some higher consideration keep up the identity of it. Now what that is, let us examine, and whether or no it will reach to our difficulty of the resurrection. Let us consider then, how that which giveth the numerical individuation to a body, is the substantial form. As long as that remaineth the same, though the matter be in a continual flux and motion, yet the thing is still the same. There is not one drop of the same water in the Thames, that ran down by White-Hall yesternight; yet no man will deny, but that it is the same river that was in Queen Elizabeth's time, as long as it is supplied from the same common stock, the sea. Though this example reacheth not home, it illustrateth the thing. If then the form remain absolutely the same after separation from the matter, that it was in the matter, (which can happen only to forms, that subsist by themselves, as human souls,) it followeth then that whensoever it is united to matter again, (all matter coming out of the same common magazine,) it maketh again the same man, with the same eyes, and all the same limbs, that were formerly. Nay, he is composed of the same individual matter, for it hath the same distinguisher and individuator, to wit, the same form or soul. Matter considered singly by itself hath no distinction: all matter is in itself the same; we must fancy it as we do the indigested chaos; it is an uniformly wide ocean. Particularize a few drops of the sea by filling a glass-full of them, then that glass-full is distinguished from

all the rest of the watery bulk: but return back those few drops from whence they were taken, and the glass-full that even now had an individuation by itself, loseth that, and groweth one and the same with the other main stock: yet if you fill your glass again, wheresoever you take it up, so it be of the same uniform bulk of water you had before, it is the same glassfull of water that you had. But as I said before, this example fitteth entirely no more than the other did. In such abstracted speculations, where we must consider matter without form, (which hath no actual being,) we must not expect adequated examples in nature. But enough is said to make a speculative man see, that if God should join the soul of a lately dead man, (even whilst his dead corpse should lie entire in his windingsheet here,) unto a body made of earth, taken from some mountain in America; it were most true and certain, that the body he should then live by, were the same identical body he lived with before his death, and late resurrection. It is evident, that sameness, thisness, and thatness, belongeth not to matter by itself, (for a general indifference runneth through it all,) but only as it is distinguished and individuated by the form. Which in our case, whensoever the same soul doth, it must be understood always to be the same matter and body.

This point thus passed over, I may piece to it what our author saith,[48] of a magazine of subsistent forms residing first in the chaos, and hereafter (when the world shall have been destroyed by fire) in the general heap of ashes: out of which God's voice did and shall draw them out, and clothe them with matter. This language were handsome for a poet, or a rhetorician to speak; but in a philosopher, that should ratiocinate strictly and rigorously, I cannot admit it. For certainly, there are no subsistent forms of corporeal things; (excepting the soul of man, which besides being an informing form, hath another particular consideration belonging to it, too long to speak of here.) But whensoever that compound is destroyed, the form perisheth with the whole. And for the natural production of corporeal things, I conceive it to be wrought out by the action and passion of the elements among themselves; which introducing new tempers and dispositions

into the bodies where these conflicts pass, new forms succeed old ones, when the dispositions are raised to such a height, as can no longer consist with the preceding form, and are in the immediate degree to fit the succeeding one, which they usher in. The mystery of all which I have at large unfolded in my above-mentioned treatise of the immortality of the soul.

I shall say no more to the first part of our physician's discourse, after I have observed, how his consequence is no good one where he inferreth that if the devils foreknew who would be damned or saved, it would save them the labour, and end their work of tempting mankind to mischief and evil.[57] For whatsoever their moral design and success be in it, their nature impelleth them to be always doing it. For as on the one side, it is active in the highest degree, (as being pure acts, that is, spirits) so on the other side, they are malign in as great an excess: by the one they must be always working, wheresoever they may work, (like water in a vessel full of holes, that will run out of every one of them which is not stopped): by the other, their whole work must be malicious and mischievous. Joining then both these qualities together, it is evident, they will always be tempting mankind, though they know they shall be frustrate of their moral end.

But were it not time that I made an end? Yes, it is more than time. And therefore having once passed the limit that confined what was becoming, the next step carried me into the ocean of errour; which being infinite, and therefore more or less bearing no proportion in it, I will proceed a little further, to take a short survey of his Second Part, and hope for as easy pardon after this addition to my sudden and indigested remarks, as if I had closed them up now.

Methinks, he beginneth with somewhat an affected discourse, to prove his natural inclination to charity; which virtue is the intended theme of all the remainder of his discourse. And I doubt he mistaketh the lowest orb or limb of that high seraphick virtue, for the top and perfection of it; and maketh a kind of human compassion to be divine charity. He will have it to be a general way of doing good: it is true, he addeth then, for God's sake; but he allayeth that again, with saying he will have that good done, as by obedience, and to

accomplish God's will; and looketh at the effects it worketh upon our souls, but in a narrow compass; like one in the vulgar throng, that considereth God as a judge, and as a rewarder or a punisher. Whereas perfect charity is that vehement love of God for his own sake, for his goodness, for his beauty, for his excellency, that carrieth all the motions of our soul directly and violently to him; and maketh a man disdain, or rather hate all obstacles that may retard his journey to him. And that face of it that looketh toward mankind with whom we live, and warmeth us to do others good, is but like the overflowing of the main stream, that swelling above its banks runneth over in a multitude of little channels.

I am not satisfied, that in the likeness which he putteth between God and man, he maketh the difference between them, to be but such as between two creatures that resemble one another. For between these, there is some proportion; but between the others, none at all. In the examining of which discourse, wherein the author observeth, that no two faces are ever seen to be perfectly alike, nay, no two pictures of the same face were ever exactly made so;[2] I could take occasion to insert a subtile and delightful demonstration of Master White's, wherein he sheweth, how it is impossible that two bodies (for example, two bowls) should ever be made exactly like one another; nay, not rigorously equal in any one accident, as namely, in weight, but that still there will be some little difference and inequality between them; (the reason of which observation our author meddleth not with;)—were it not that I have been so long already, as digressions were now very unseasonable.

Shall I commend or censure our author for believing so well of his acquired knowledge, as to be dejected at the thought of not being able to leave it a legacy among his friends?[3] Or shall I examine whether it be not a high injury to wise and gallant princes, who out of the generousness and nobleness of their nature, do patronize arts and learned men, to impute their so doing to vanity of desiring praise, or to fear of reproach.

But let these pass: I will not engage any that may befriend him, in a quarrel against him. But I may safely produce

Epictetus to contradict him, when he letteth his kindness engulf him in deep afflictions for a friend: for he will not allow his wise man to have an inward relenting, a troubled feeling, or compassion of another's misfortunes. That disordereth the one, without any good to the other. Let him afford all the assistances and relievings in his power, but without intermingling himself in the other's woe; as angels, that do us good, but have no passion for us. But this gentleman's kindness goeth yet further :[5] he compareth his love of a friend to his love of God; the union of friends' souls by affection, to the union of the three persons in the Trinity, and to the hypostatical union of two natures in one Christ, by the Word's incarnation. Most certainly he expresseth himself to be a right good-natured man. But if St. Augustine retracted so severely his pathetical expressions for the death of his friend, saying, they savoured more of the rhetorical declamations of a young orator, than of the grave confession of a devout christian, (or somewhat to that purpose,) what censure upon himself may we expect of our physician, if ever he make any retractation of this discourse concerning his religion.

It is no small misfortune to him, that after so much time spent, and so many places visited in a curious search, by travelling after the acquisition of so many languages; after the wading so deep in sciences, as appeareth by the ample inventory and particular he maketh of himself: the result of all this should be to profess ingenuously he had studied enough, only to become a sceptick; and that having run through all sorts of learning, he could find rest and satisfaction in none.[8] This, I confess, is the unlucky fate of those that light upon wrong principles. But Master White teacheth us, how the theorems and demonstrations of physicks may be linked and chained together, as strongly, and as continuedly, as they are in the mathematicks, if men would but apply themselves to a right method of study. And I do not find that Solomon complained of ignorance in the height of knowledge;[8] (as this gentleman saith;) but only, that after he hath rather acknowledged himself ignorant of nothing, but that he understood the natures of all plants, from the cedar to the hyssop, and was acquainted with all the ways and paths of wisdom and

knowledge, he exclaimeth, that all this is but toil and vexation of spirit; and therefore adviseth men to change human studies into divine contemplations and affections.

I cannot agree to his resolution of shutting his books, and giving over the search of knowledge, and resigning himself up to ignorance, upon the reason that moveth him; as though it were extreme vanity to waste our days in the pursuit of that, which by attending but a little longer, (till death hath closed the eyes of our body, to open those of our soul,) we shall gain with ease, we shall enjoy by infusion, and as an accessory of our glorification.[8] It is true, as soon as death hath played the midwife to our second birth, our soul shall then see all truths more freely, than our corporal eyes at our first birth see all bodies and colours, by the natural power of it, as I have touched already, and not only upon the grounds our author giveth. Yet far be it from us, to think that time lost, which in the mean season we shall laboriously employ, to warm ourselves with blowing a few little sparks of that glorious fire, which we shall afterwards in one instant leap into the middle of, without danger of scorching. And that for two important reasons; (besides several others, too long to mention here;) the one, for the great advantage we have by learning in this life; the other, for the huge contentment that the acquisition of it here (which implyeth a strong affection to it) will be unto us in the next life. The want of knowledge in our first mother (which exposed her to be easily deceived by the serpent's cunning) was the root of all our ensuing misery and woe. It is as true (which we are taught by irrefragable authority) that *omnis peccans ignorat:* and the well-head of all the calamities and mischiefs in all the world consisteth of the troubled and bitter waters of ignorance, folly, and rashness; to cure which, the only remedy and antidote is the salt of true learning, the bitter wood of study, painful meditation, and orderly consideration. I do not mean such study, as armeth wrangling champions for clamorous schools, where the ability of subtile disputing to and fro, is more prized than the retrieving of truth: but such as filleth the mind with solid and useful notions, and doth not endanger the swelling it up with windy vanities. Besides, the sweetest companion and

entertainment of a well-tempered mind is to converse familiarly with the naked and bewitching beauties of those mistresses, those verities and sciences, which, by fair courting of them, they gain and enjoy; and every day bring new fresh ones to their seraglio, where the ancientest never grow old or stale. Is there any thing so pleasing or so profitable as this?

——Nil dulcius est, bene quam munita tenere
Edita doctrina sapientum templa serena;
Despicere unde queas alios, passimque videre
Errare, atque viam palanteis quærere vitæ.

But now, if we consider the advantage we shall have in the other life by our affection to sciences, and conversation with them in this, it is wonderful great. Indeed that affection is so necessary, as without it we shall enjoy little contentment in all the knowledge we shall then be replenished with: for every one's pleasure in the possession of a good is to be measured by his precedent desire of that good, and by the equality of the taste and relish of him that feedeth upon it. We should therefore prepare and make our taste before-hand by assuefaction unto, and by often relishing what we shall then be nourished with. That Englishman that can drink nothing but beer or ale, would be ill bestead, were he to go into Spain or Italy, where nothing but wine groweth: whereas a well experienced *goinfre*, that can criticise upon the several tastes of liquors, would think his palate in Paradise, among those delicious nectars, (to use Aretine's phrase upon his eating of a lamprey.) Who was ever delighted with tobacco the first time he took it? and who could willingly be without it, after he was awhile habituated to the use of it? How many examples are there daily of young men that marrying upon their father's command, not through precedent affections of their own, have little comfort in worthy and handsome wives, that others would passionately affect. Archimedes lost his life, for being so ravished with the delight of a mathematical demonstration, that he could not of a sudden recall his ecstasied spirits to attend the rude soldier's summons: but instead of him, whose mind had been always fed with such subtile diet, how many plain country-gentlemen doth your Lordship and I know, that rate the knowledge of their hus-

bandry at a much higher pitch; and are extremely delighted by conversing with that; whereas the other would be most tedious and importune to them? We may then safely conclude, that if we will joy in the knowledge we shall have after death, we must in our life-time raise within ourselves earnest affections to it, and desires of it, which cannot be barren ones; but will press upon us to gain some knowledge by way of advance here; and the more we attain unto, the more we shall be in love with what remaineth behind. To this reason then adding the other, how knowledge is the surest prop and guide of our present life; and how it perfecteth a man in that which constituteth him a man, his reason; and how it enableth him to tread boldly, steadily, constantly, and knowingly, in all his ways: and I am confident, all men that shall hear the case thus debated, will join with me in making it a suit to our physician, that he will keep his books open, and continue that progress he hath so happily begun.

But I believe your Lordship will scarcely join with him in his wish, that we might procreate and beget children without the help of women, or without any conjunction or commerce with that sweet and bewitching sex.[9] Plato taxeth his fellow philosopher (though otherwise a learned and brave man) for not sacrificing to the Graces, those gentle female goddesses. What thinketh your Lordship of our physician's bitter censure of that action, which Mahomet maketh the essence of his paradise? Indeed, besides those his unkindnesses, or rather frowardnesses, at that tender-hearted sex, (which must needs take it ill at his hands,) methinketh he setteth marriage at too low a rate, which is assuredly the highest and divinest link of humane society. And where he speaketh of Cupid, and of beauty, it is in such a praise, as putteth me in mind of the learned Greek reader in Cambridge, his courting of his mistress out of Stephens his Thesaurus.

My next observation upon his discourse draweth me to a logical consideration of the nature of an exact syllogism: which kind of reflection, though it use to open the door in the course of learning and study; yet it will near shut it in my discourse, which my following the thread that my author spinneth, assigneth to this place. If he had well and thoroughly

considered all that is required to that strict way of managing our reason, he would not have censured Aristotle for condemning the fourth figure, out of no other motive, but because it was not consonant to his own principles;[9] that it would not fit with the foundations himself had laid; though it do with reason (saith he) and be consonant to that, which indeed it doth not, at all times, and in all circumstances. In a perfect syllogism, the predicate must be identified with the subject, and each extreme with the middle term, and so, consequently, all three with one another. But in Galen's fourth figure, the case may so fall out, as these rules will not be current there.

As for the good and excellency that he considereth in the worst things, and how far from solitude any man is in a wilderness;[10] these are (in his discourse) but equivocal considerations of good, and of loneliness. Nor are they any ways pertinent to the morality of that part, where he treateth of them.

I have much ado to believe, what he speaketh confidently,[11] that he is more beholding to Morpheus, for learned and rational, as well as pleasing, dreams, than to Mercury for smart and facetious conceptions; whom Saturn (it seemeth by his relation) hath looked asquint upon in his geniture.

In his concluding prayer,[14] wherein he summeth up all he wisheth, methinketh his arrow is not winged with that fire, which I should have expected from him upon this occasion: for it is not the peace of conscience, nor the bridling up of one's affections, that expresseth the highest delightfulness and happiest state of a perfect christian. It is love only that can give us heaven upon earth, as well as in heaven; and bringeth us thither too: so that the Tuscan Virgil had reason to say,

——In alte dolcézze
Non si puo gioir, se non amando.

And this love must be employed upon the noblest and highest object, not terminated in our friends. But of this transcendent and divine part of charity, that looketh directly and immediately upon God himself; and that is the intrinsical form, the utmost perfection, the scope and final period of true religion, (this gentleman's intended theme, as I con-

ceive,) I have no occasion to speak any thing, since my author doth but transiently mention it; and that too, in such a phrase as ordinary catechisms speak of it to vulgar capacities.

Thus, my Lord, having run through the book (God knows how slightly, upon so great a sudden) which your Lordship commanded me to give you an account of, there remaineth yet a weightier task upon me to perform; which is, to excuse myself of presumption for daring to consider any moles in that face, which you had marked for a beauty. But who shall well consider my manner of proceeding in these remarks, will free me from that censure. I offer not at judging the prudence and wisdom of this discourse: those are fit inquiries for your Lordship's court of highest appeal: in my inferiour one, I meddle only with little knotty pieces of particular sciences, *(Matinæ apis instar, operosa parvus carmina fingo,)* in which it were peradventure a fault for your Lordship to be too well versed; your employments are of a higher and nobler strain, and that concerns the welfare of millions of men:

> Tu regere imperio populos (Sackville) memento
> (Hæ tibi erunt artes) pacisque imponere morem.

Such little studies as these belong only to those persons that are low in the rank they hold in the commonwealth, low in their conceptions, and low in a languishing and rusting leisure, such an one as Virgil calleth *ignobile otium*, and such an one as I am now dulled withal. If Alexander or Cæsar should have commended a tract of land, as fit to fight a battle in for the empire of the world, or to build a city upon, to be the magazine and staple of all the adjacent countries; no body could justly condemn that husbandman, who, according to his own narrow art and rules, should censure the plains of Arbela, or Pharsalia, for being in some places sterile; or the meadows about Alexandria, for being sometimes subject to be overflown; or could tax aught he should say in that kind for a contradiction unto the other's commendations of those places, which are built upon higher and larger principles.

So, my Lord, I am confident I shall not be reproached of unmannerliness for putting in a demurrer unto a few little particularities in that noble discourse, which your Lordship

gave a general applause unto; and by doing so, I have given your Lordship the best account I can of myself, as well as of your commands. You hereby see what my entertainments are, and how I play away my time,

> —— Dorset dum magnus ad altum
> Fulminat Oxonium bello, victorque volentes
> Per populos dat jura; viamque affectat Olympo.

May your counsels there be happy and successful ones, to bring about that peace, which if we be not quickly blessed withal, a general ruin threateneth the whole kingdom.

From Winchester-House, the 22nd (I think I may say the 23rd, for I am sure it is morning, and I think it is day) of December, 1642.

Your Lordship's most humble

And obedient servant,

KENELM DIGBY.

POSTSCRIPT.

My Lord,

Looking over these loose papers to point them, I perceive I have forgotten what I promised in the eighth sheet, to touch in a word concerning grace: I do not conceive it to be a quality infused by God Almighty into a soul.

Such kind of discoursing satisfieth me no more in divinity, than in philosophy. I take it to be the whole complex of such real motives (as a solid account may be given of them) that incline a man to virtue and piety; and are set on foot by God's particular grace and favour, to bring that work to pass. As for example: to a man plunged in sensuality, some great misfortune happeneth, that mouldeth his heart to a tenderness, and inclineth him to much thoughtfulness: in this tem-

per, he meeteth with a book or preacher, that representeth lively to him the danger of his own condition; and giveth him hopes of greater contentment in other objects, after he shall have taken leave of his former beloved sins. This begetteth further conversation with prudent and pious men, and experienced physicians, in curing the soul's maladies; whereby he is at last perfectly converted, and settled in a course of solid virtue and piety.

Now, these accidents of his misfortune,—the gentleness and softness of his nature, his falling upon a good book, his encountering with a pathetick preacher, the impremeditated chance that brought him to hear his sermon, his meeting with other worthy men, and the whole concatenation of all the intervening accidents, to work this good effect in him, and that were ranged and disposed from all eternity, by God's particular goodness and providence for his salvation, and without which he had inevitably been damned,—this chain of causes, ordered by God to produce this effect, I understand to be grace.

END OF RELIGIO MEDICI, &c.

EDITOR'S POSTSCRIPT

TO RELIGIO MEDICI.

I HAD intended to insert, in another place, one or two of the prefaces which appeared with the foreign editions of Religio Medici, in order to shew the various opinions entertained of the author, abroad. On second thoughts however I have determined to insert them here, as their more appropriate situation. Merryweather's and the Parisian preface are given entire; of Moltkè's the latter half, as relating solely to himself, has been omitted. From that of the French translation of the (first) Dutch edition, I have only given the passage referring to Sir Thomas's visit to the continent, which I noticed at p. xiii of my own preface.

Merryweather's Preface.

LECTORI S.

OPUSCULUM hoc author, et sibi et aliis injurius, Anglus Anglice scripserat; eamque non paucorum esse querelam intellexeram. Fecit enim titulus solus Latine locutus, ut complures qui cum lingua pretium quoque ejusdem nescirent, legendi et intelligendi copiam flagitarent. Hoc itaque tum ut horum desideriis satisfacerem, tum ne quod ab omnibus legi dignum est, angustis vernaculæ linguæ finibus coarctaretur, Latinum facere conatus sum. Quoniam vero sermonis elegantiam Latinis auribus me reddere posse desperavi, saltem authoris sententiam summa qua potui fide ut redderem, mihi annitendum judicavi; quod et me assecutum spero. Tuum erit (lector candide) quod tua causa factum est, boni consulere. Vale.

JOHANN. MERRYWEATHER.

Preface to the Parisian reprint of Merryweather's Translation.

LECTORI S.

ATHEISMI suspicione laborantes medicos, purgaturus hic medendi artifex, et innocentem artem, apostoli laudibus claram, interque divina charismata annumeratam, à magnis et impudentibus vulgi calumniis vindicaturus, fidem ambiguam non tantum manifestat, verùm etiam occupat omnia quæ contra illam ab atheis, Turcis,

Judæisque opponi posse arbitratus est. Magni sanè erat momenti ad medicorum famam, hanc injuriam propulsare; dico ampliùs reipublicæ Christianæ non parùm intererat, viros sibi servare innocentes eosdemque doctos, qui dum profundis aut erectis conatibus toti naturæ rimandæ mundanoque operi pervolvendo incumbunt, suo simul opifici haud dubiè faciunt. Nihil igitur suboleat mali, Religionis Medici titulus, siquidem ejus author firmissimum primæ veritatis patrocinium suscipit: doctissimi acumen ingenii, plurimis theologiæ dogmatibus tradit, subactam et fœcundam mentem in obsequium fidei accommodat; tandemque inter dissidentia ecclesiæ membra Christianæ scissuræ ingemiscit. Is est (mi lector) quem securus tanges: sed nondum satis tibi innotescit, Anglum se licet esse profiteatur, et ad sectam Anglicanam per vim malignam nativitatis aut fortunæ præter voluntatem adactum, penè tamen Catholicus est, et ita ab Anglicanâ doctrinâ ad Romanam deflectens ac propendens, ita ad fidem nostram universalem compositus, ita leniter dissidens à nobis, ut metu tantùm sævientis in Angliâ persecutionis, metu inquisitionis hæreticæ in aliquibus adhuc aberrationibus detineri videatur. Sanè non pertinax illi suæ sectæ ingenium, sed facilè in nostram pietatem sincerè mutabile. Quid enim aliud est, parentum aut amicorum funeribus se volentem nolentem, interposito etiam voto, solvere justas preces ut animæ illorum, dilatâ conscientiâ criminibusque dissolutis, eximantur à cruciatu et transvolent in sinum Abrahæ, quid est inquam aliud quam medicos illos purgatorii ignes nobiscum asserere: quos si se dicat non posse capere, sensu supponit aut intelligentia non fide? Quid aliud, adhibere sanctos ad dolores, eorumque opem ac suffragia, urgentibus miseriis, invocare, quam ad fidem Catholicam se adjungere? Quid angelos custodiæ nostræ commissos ac interiore curâ deputatos profiteri, quam nostrarum partium theologum se facere? Quid summum pontificem non modo non aversari, sed eundem necessaria veneratione colere, et observare, invehi in eos qui malè ei dicunt ac antichristum nominant, quid inquam nisi vicino vestigio propendere in Catholicam ecclesiam, sese removere à suis, et Romam, cursu licet lento, contendere. Timidus quidem est dum se tegit, caliginemque offundit altaris mysterio: sed quantum sit hoc in proposito clandestinus, quamque habeat apud se reconditam doctrinam, conscia sunt ejus de miraculis verba, ubi non unum alio majus asserit, et fide eadem qua unum creditur aliud credi posse innuit: disceptatricis theologiæ argutias ferre nequit, nec sublimem hanc scholæ calliditatem patitur, at non illa placet Catholicis omnibus. Alicubi fortasse leves ad credendum irridet, cupitque credulitati projectæ ac effusæ adhibere modum, at nihil agit contra nos, cum ibidem pertinaces suisque consecratos erroribus ludibrio habeat. Sed quidquid tandem sit de eius genio ac fidei integritate quid vetat, quo minus suadente etiam scriptura salutem ex inimicis nostris consequamur? miraberis saltem, lector, generosos ac faciles impetus, eumque ex solo ærario suo, libris vacuum, deprompsisse tam varia, quæ ditionis solius memoriæ erant: quid si patres, antiquitatis sacræ testes, consulere potuisset? Certè illud etiam observabis, ad rationum momenta expendenda adeò placidum et mansuetum ingenium af-

ferre, tantam lenitatem condescensionemque (utar verbo latinorum patrum) ut non sit censendus hæreticus; imò sperare possimus, fore ut animus fidei capescendæ idoneus, adornatis erroribus planè renunciet, et ampliori lumine à Deo illustretur.

First part of Moltke's Preface.

ANTE annum, et quod excurrit, mihi ex aula Imper. reduci, leni dabatur frui otio. Ut tamen minimè otiosus existerem, redii paululum ad jucundiora illa studia, quibus per multos annos continuæ peregrinationes, aliaque in principum servitiis negotia omne tempus subduxerunt, imò eripuerunt. Inter alios auctores incidi tunc in librum, cui titulus Religio Medici. Jam antè mihi innotuerat, lectionem istius libri multos præclaros viros delectasse, imò occupasse. Non ignorabam librum in Anglia, Gallia, Italia, Belgio, Germania cupidissime legi. Constabat mihi, eum non solum in Anglia ac Batavia, sed et Parisiis cum præfatione, in qua auctor magnis laudibus fertur, esse typis mandatum. Compertum mihi erat multos magnos atque eruditos viros censere, auctorem (quantum ex hoc scripto perspici potest) sanctitate vitæ ac pietate elucere: eum vera: firma ac generosa fide se scrupulis, quibus interdum conflictatus fuit, exolvisse; ejus conatus tendere ad profectum, ad bonam mentem, ad veram non fictam pietatem, ad admirationem sapientiæ, secretorumque Dei; ad objurgandum cæcum zelum in religione Christiana, ad insinuandum studium charitatis et concordiæ, ad irridendum stolida atque absurda atheorum ad testatum faciendum, non omnes ingeniosos rerum naturalium atque abstrusarum indagatores flagitiosissimi atheismi contagione contaminatos esse. Reperiebam tamen ego, hominem, præsertim si durum ac rigidum (ut nunc mos fert) nanciscatur censorem, in nonnullis reprehensionem mereri: dubia enim interdum proponit, quæ non resolvit; scrupulos injicit, quos non eximit. Se difficultatibus nonnullis urgeri fatetur, quomodo illis liberemur silet. Hæc animadvertens annotavi nonnulla ad ea, quæ mihi aut displicebant, aut parum satisfaciebant: ea vero, quæ prodesse judicabam, confirmavi testimoniis aut ex Sacra Scriptura, aut ex patribus, aut ex aliis bonis auctoribus depromptis. Sed privato hæc meo usui, non publico destinaveram: unde multa, quæ nonnullorum hominum judicio, forsan animadversionem requirerent, mihi verò nullam scrupulosam curam injecerunt, intacta reliqui; nunc ea addere non vacat. Edi hæc amicorum impulsu permisi, ut liber, qui multorum in manibus versatur, multorum commodo inserviat: nam pleraque, quæ forte quibusdam offendiculo fuerunt, aut commodè explicata, aut modestè confutata arbitror. Hæc annotata, benevole lector, tibi non fore ingrata confido: multa enim ex sacra ac profana antiquitate, ex morali ac naturali philosophia addita vides. Auctor noster est Thomas Browne, ut testatur præfatio in editione Leidensi; natione Anglus, arte medicus, ut manifestum faciunt Sectio i. et v. l. 1. et Sect. ix. l. 2. Quod attinet hominis religionem; non fuit puritanismo addictus, aut turpitudine independentium errorum fœdatus. Sect. ii. l. 1. prodit *se fidem illam profiteri, quam servator docuit, quam disseminarunt Apostoli, quæ à*

patribus auctoritatem, à martyribus confirmationem accepit. Sect. iii. l. 1. cæcum atque immoderatum hominum zelum objurgans, *se citius sibi brachium, quam ædem sacram violaturum, quam sancti alicujus aut martyris monumentum dejecturum testatur.* Ibidem docet *in Græcis et Romanis, et Africanis ecclesiis ritus esse, qui zelo saniori sunte recte et Christiane uti possint.* Sect. vi. l. 1. in schismata piè invehitur, ac se *libenter in theologia viam tritam insistere* fatetur. Sectione iv. et v. l. 1. et Sect. iii. l. 2. concordiæ studium commendat, Christianosque à studio altercandi, cum bile intempestive disputandi, convitiandi, ac maledicendi alienos optat. Secutus est placita antiquæ ecclesiæ Anglicanæ: prout illa tempore Elisabetæ restabilita fuit. Sect. v, l. 1. fatetur, se *istius Ecclesiæ fidei sacramentum dixisse, neminemque se adducturum, alios articulos ut fide, aliasve constitutiones obedientia ut amplectatur: ea vero, quæ adiaphora accesserint, ad judicii proprii præceptum, et pro privato pietatis suæ genio se recipere aut repudiare.* In nonnullis quidem ab ea discrepare videtur. Sect. iii. dicit *aquam lustralem ejus judicio non imponere, nec religionem pervertere: se religiose peregrinantium labores ridere haud posse, nec monachorum conditionem contemnere; se in processione solemni quandoque abundantius flevisse; se optasse sibi licere pro defunctis orare:* at ea ecclesia, cum adhuc esset sui juris, nempe ante miserrimum illud ac nunquam satis deplorandum belli civilis incendium, (quod non solum monarchiam absumpsit: sed et introducendo varias ac nondum numero circumscriptas sectas, ita illam (proh dolor!) ecclesiam depravavit, ut vix vestigia pristinæ integritatis superesse videantur) nullas leges tulerat, quibus ejusmodi privatam opinionem modestè habentes devoveri, aut è catalogo Christianorum expungi possent: illaque archiepiscopis atque episcopis stipata, sedulo tunc curabat ut religionis negotia sine odio ac ira, sine convitiis ac stomachosis clamoribus tractarentur. Si autem hæc et alia pro magnis lapsibus habeantur, auctorem nihilominus excusandum puto; quia *se iis tantum patrocinaturum promittit* Sect. ult. l. 1. *quæ doctissimorum calculus approbaverit:* et in præfatione se *partim privatæ exercitationis gratia, partim ne memoriæ exciderent, hæc conscripsisse; nequaquam ut aliis normam ac religionis canones præscriberet,* tradit: qua modestia, meo judicio, omnem errorem expiare videtur. In aliis etiam non omnibus placebit: nec mihi in omnibus (ut principio dixi) satisfacit: hæc tamen, quæ jam protuli, bonorum librorum beneficio destitutum cum hæc elaboraret, (ut fatetur in præfatione) extra culpam ponere videntur. Scripsit hunc tractatum lingua vernacula. Quidam Anglus nomine Johan Merryweather, latinum reddidit illum: nec in sermone aliquid reprehendendum existimo: pleraque enim nativo lepore, nec contra naturam suam posita aut inversa videmus: at forsan magis adhuc orationem admiraremur, si ipse latine scripsisset: nisi verisimilius, mores illum, non verba voluisse *componere, animis non auribus scripsisse: oratio enim sollicita philosophum non decet.* Sen. in Ep. 100.

* * * * * * * * * * * * * L.N.M.E.M.

Vale. Argentinæ, Anno MDCLII.

Extract from the Preface to the French Translation.

Pour moy, qui ay un peu contribué à la production de ce livre par la traduction que j'en ay faite; je puis donner cette assurance et porter ce tesmoignage à sa gloire, que j'ay beaucoup profité dans la pratique des vertus par son estude et sa lecture, en ce qu'il m'a appris d'avoir tousiours un Dieu devant mes yeux, et de n'oublier jamais que je suis en sa presence. Ayez donc à jamais cette gloire, grand et docte personnage, de m'avoir rendu plus vertueux, plus sçavant, et mieux entendu que je n'estois, par la lecture de vostre ouvrage. Je croirois estre infame le reste de mes jours, si je manquois maintenant à vous rendre graces de l'honneur que vous me fites à Vorburg chès mon noble Cousin Monsieur M. où vous eustes la bonté de me recommander tres-particulièrement à ce livre, lors que nous estions à table, et que nous eusmes la satisfaction de vous entendre discourir sur beaucoup de matières rares et curieuses, et que nous eusmes le plaisir de vous voir entretenir, avec tant d'eloquence et d'esprit, toute cette illustre compagnie qui resta tout à fait dans l'admiration d'avoir ouy tant d'oracles, et d'avoir escouté tant de merveilles: depuis ce temps-là, mon cher Monsieur, j'ay conçu une telle estime de vos merites, qu'il n'est jour de ma vie que je ne me souvienne de vous, et que je ne fasse des vœux afin qu'un chacun vous rende l'honneur qui vous est deu.

At page x, of my preface, line 4, the folio edition of *Pseud. Epid.* 1659, is called the *Fourth:* it was the *Third.* On the same page, the seventh edition of *R. M.* is said to contain 283 pp. Having, since, obtained a copy, I find that the work itself is paged to 297: and Digby's Observations, which follow it, are separately paged to 78; besides 23 pp. of prefaces, titles, and list of books:—together, 398.

I have recently seen in Mr. Rodd's possession, a very choice copy, in old red morocco, gilt edges, (which had successively belonged to Mr. Bindley and Mr. Heber,) of *The Religion of a Lady.* Written by a Right Reverend Prelate of the Church of England, and published by command of a Noble Lady.—Proper to be read by all, but more particularly the Ladies of Great Britain. London: Printed for J. Torbuck, in Clare Court, near Drury Lane, and sold by the Booksellers of London and Westminster, 1736.—foolscap 12mo.—Is it probable that a "Right Reverend prelate of the Church of England" should have uttered such sentiments as the following, which surely are inconsistent with, if not in direct contradiction to the doctrines of that church? "Your Ladyship sees, *first*, what is meant by saving a soul, viz.

to deliver it from vitious habits, and fearful punishments, the fatal consequents of such habits; and by establishing *virtue* therein *to recommend* it to the favour of God. And, *secondly*, that the Gospel of Christ was designed to this very end; and its tendency hereunto is its wisdom; and *thirdly*, from hence you also perceive in what respect faith in Jesus Christ is said to save us:—viz. because this faith is our receiving the Christian moral for the rule of our lives, and the threats and promises contained in the Gospels for the outward motives of our practice according to that rule."

Opposite to the title page of this little volume, is a list of "Books printed for J. Torbuck," beginning with "Sir Thomas Browne's Religio Medici, or &c. &c."—to which is appended the following paragraph:—

"The publick are hereby cautioned against a surreptitious pamphlet just published, which contains but part of this book, being no more than seven sheets, on a gouty letter, and imposed on the world at 1s. 6d. stitched. The above new and genuine edition, with notes, annotations, and observations by Sir Kenelm Digby and other learned men, make above twelve sheets, each of which contains double the quantity of the surreptitious one, and is sold, neatly bound in a pocket size, and adorned with an emblematical frontispiece, for 2s. 6d. or sewed in blue covers for 2s." In all probability the edition here spoken of is that which I have enumerated as the *fourteenth* edition, page xi, of my preface to *R. M.*

From Mr. Rodd of Newport Street, (to whose remarkably accurate and extensive knowledge of books, as well as to his great courtesy and kindness in communicating it, I am already much indebted,) I have just received the following notices:—

"*Reflections on a book entitled A Lady's Religion* forms one of the articles in *The Occasional Paper*, 4to. 1697.

"*The Religion of a Soldier* appears to be the first paper in some on the publications about the year 1730-40 under the title of *Miscellany*, viz. *A new M. the Pall Mall M. &c.*"

Pseudodoxia Epidemica.

OR

ENQUIRIES INTO

VERY MANY RECEIVED TENETS AND COMMONLY PRESUMED TRUTHS, WHICH EXAMINED PROVE BUT

VULGAR AND COMMON ERRORS.

EIGHTH EDITION.

WITH ADDITIONS FROM MSS. IN THE BRITISH MUSEUM, AND NOTES BY DEAN WREN, E. W. BRAYLEY, JUN. F.L.S., AND OTHERS.

ORIGINALLY PUBLISHED IN

1646.

Ex libris colligere quæ prodiderunt authores longe est periculosissimum; rerum ipsarum cognitio vera e rebus ipsis est.—JUL. SCALIGER.

EDITOR'S PREFACE

TO PSEUDODOXIA EPIDEMICA.

If the conception and plan of the present work is not to be ascribed to the mental activity of its author *alone*,—if we are not to regard it *solely* as the result of his own native and irrepressible thirst for knowledge, and of that unrelenting spirit of investigation which led him to scrutinize every position before he admitted it; if, in short, we are to allow, that Sir Thomas Browne might have been, in some degree, impelled to this undertaking by the suggestions of another, may we not with great probability attribute the impulse to the opinions expressed by Lord Bacon as to the *Use of Doubts*, and the advantages which might result from drawing up a *Calendar of Doubts, Falsehoods*, and *Popular Errors?* In support of this conjecture, I will insert some of those opinions, (from Mr. Basil Montagu's Lectures on Bacon, with which I have been favored by that gentleman, at the request of my kind friend Mr. Amyot,) with Mr. Montagu's remarks.

"'The recording and proposing of doubts hath in it a two-fold use. One, that it munites and fortifies philosophy against error, when that which is not altogether so clear and evident is not defined and avouched, (lest error should beget error,) but a judgment upon it is suspended and not definitive.'—It will be seen in a future lecture, that Lord Bacon enumerates a tendency to hasty assent among the idols of the understanding, by which we are diverted from the truth. In this place, he contents himself with incidentally noticing, that a record of doubts has a tendency to prevent the influence of this idol.—'The other, that the entry of doubts, and recording of them, are so many sponges which continually draw and suck

unto them an increase and improvement of knowledge; whereby it comes to pass that those things which, without the suggestion of doubts, had been slightly, and without observation, passed over, are, by occasion of such dubitations, more seriously and attentively considered.'—Lord Bacon, in various parts of his works, admonishes us of our duty to keep our minds open to improvement, and not to admit as truths what may be either false, or only a proper subject for doubts. He warns us in his doctrine of the idols of the understanding, that, from our love of truth, we are anxious to possess it, and too ready to imagine ourselves enriched by the possession of counterfeit, instead of real coin. He says—'The mind of man doth wonderfully endeavour and extremely covet, that it may not be pensile; but that it may light upon something fixed and immoveable, on which, as on a firmament, it may support itself in its swift motions and disquisitions. Aristotle endeavours to prove that, in all motions of bodies, there is some point quiescent, and very elegantly expounds the fable of Atlas, who stood fixed, and bare up the heavens from falling, to be meant of the poles of the world, whereupon the conversion is accomplished. In like manner, men do earnestly seek to have some Atlas, or axis of their cogitations within themselves, which may, in some measure, moderate the fluctuations and wheelings of the understanding, fearing it may be the falling of their heaven. An impatience of doubt, and an unadvised haste of assertion, without due and mature suspension of the judgment, is an error in the conduct of the understanding. For the two ways of contemplation, are not unlike the two ways of action, commonly spoken of by the ancients; of which the one was a plain and smooth way in the beginning, but in the end impassable;—the other rough and troublesome in the entrance, but after a while fair and even. So it is in contemplations:—if a man will begin in certainties, he shall end in doubts; but if he be content to begin with doubts, and have patience a while, he shall end in certainties. * * * Wherefore I report as deficient *a calendar of dubitations*, or problems in nature, and approve the undertaking of such a work as a profitable pains; so care be had that, as knowledge daily grows up (which certainly

will come to pass if men hearken unto us,) such doubts as be clearly discussed, and brought to resolution, be rased out of the catalogue of problems. It would be a very profitable course to adjoin to the calendar of doubts and non-liquets, *a calendar of falsehoods, and of popular errors,* now passing unargued in natural history and opinions, that sciences be no longer distempered and abased by them.'

"Since Lord Bacon's time, there have been publications on vulgar errors, or erroneous opinions received as truths by the community. The first was published in the year 1646, by Sir Thomas Browne. It is entitled, *Pseudodoxia Epidemica, or Enquiries into very many received Tenets, and commonly received Truths, by Sir Thomas Browne, Knt. M.D.* (From his preface it will be found, that before Lord Bacon's time, as I conceive, but certainly before the time of Sir Thomas Browne, there were other works upon this subject.) Of this work, Mr. Jeremy Bentham, in his work on Fallacies, says, 'Vulgar Errors is a denomination which, from a work on this subject by a physician of name in the 17th century, has obtained a certain degree of celebrity. Not the moral (of which the political is a department,) but the physical was the field of the errors, which it was the object of Sir Thomas Browne to hunt out and bring to view; but of this restriction, no intimation is given by the words of which the title of his work is composed.' It is rather interesting to see that antipathy to improvement in the time of Sir Thomas Browne was, as it is, and to a certain extent ever will be, so rife, that he thought it expedient to guard against such prejudices by an amulet to charm priests, physicians, and philosophers.[1]"—*Mr. Montagu's MS.*

By whatever inducements, however, we may suppose Browne to have been stimulated to the production of the *Pseudodoxia Epidemica,* few will hesitate to admit that he was peculiarly qualified for the task. It was in his very nature to inquire (as I have remarked), and he was not content to receive any thing, without scrutiny,—except in matters of

[1] "See his preface, in which he says, 'we cannot expect the frown of theology herein, &c. &c.' to the end of the paragraph."

faith. The exception may be given in his own words. "In philosophy, where truth seems double-faced, there is no man more paradoxical than myself; but in divinity, I love to keep the road: and, though not in an implicit, yet an humble faith, follow the great wheel of the church, by which I move, not reserving any proper poles, or motion from the epicycle of my own brain."[2] Again:—"where the scripture is silent, the church is my text; where that speaks, 't is but my comment; where both are silent,"[3] &c. If we add to these passages the following avowal,—"I am, I confess, naturally inclined to that which misguided zeal terms superstition,"[4]—we are furnished with the true key to explain his belief in witchcraft, and Satanic influence, as well his partiality for the Ptolemaic system of the universe. He regarded these all as being, to a certain extent, subjects of revelation; and therefore[5] to be received implicitly. But every thing not so supported, fell under the process of his excruciation. His very curious and extensive reading,—his daily and ardent pursuit of every branch of natural history,—the labour he was constantly willing (as Dr. Johnson observes)[6] to pay for truth, in patient and reiterated experiments upon even the most trifling or absurd questions,—together with the ready access, which his great celebrity and extended acquaintance procured him, to the collections and observations of the literary and scientific men of his day; all these supplied him with copious materials for the exercise of his inquisitive propensities. Every doubt was brought to the test of experiment and examination. His *Common-place Books*[7] exhibit abundant evidence that he trusted nothing to memory, but noted down, at the moment they struck him, the experiments and inquiries he deemed necessary to be made, together with results as they arose. That this process of accumulation began early in life, is evident from the date of his first edition; while subsequent alterations, and the constant accessions of new matter,[8] (some even now first printed) may serve to convince

[2] *Rel. Med.* p. 9. [3] *Rel. Med.* p. 6. [4] *Rel. Med.* p. 4.

[5] See this ground stated by his annotator Dean Wren, who with still greater vehemence advocated Browne's astronomical belief.—Vol. ii, 210, note 6.

[6] In his *Life of Browne*, vol. i. [7] Vol. iv.

[8] These alterations and additions are pointed out in the notes to the present

us, that throughout life he continued, as the constantly increasing "diversion" of his business or acquaintance allowed him opportunity, to enrich his treasury of doubts and speculations.

Let us now proceed to enumerate the editions and translations which have appeared.

The First Edition is in pot folio, with the following title-page. *Pseudodoxia Epidemica: or, Enquiries into very many received Tenets, and commonly presumed Truths. By Thomas Browne, Dr. of Physick. Jul. Scalig. Ex libris colligere quæ prodiderunt authores, longe est periculosissimum; rerum ipsarum cognitio vera e rebus ipsis est. London, Printed by T. H. for Edward Dod, and are to be sold in Ivie Lane.* 1646. On the leaf opposite the title is *Downame's Imprimatur.*[9] The title, preface, and table of contents, occupy 20 pages, and the rest of the work 386 pp. the last of which contains a table of *errata*.

The Second Edition is the handsomest, as to typography, which has hitherto appeared. It is in foolscap folio, with marginal notes; a single line runs close round each page, with a second above the running title and on the outside of the marginal notes. The title is, *Pseudodoxia*, &c. (as before); *Second Edition, corrected and much enlarged by the author. Together with some Marginal Observations, and a Table alphabeticall at the end. London, Printed by A. Miller, for Edw. Dod and Nath. Ekins, at the Gunne in Ivie Lane.* 1650. The title, prefaces, and table of contents, occupy 16 pp.: then follow 329 pp. of the work, 10 pp. of index, and a blank. The Epistle "to the Reader," is followed by "an Advertisement concerning the Marginall Annotations," which, as inapplicable to the present, I have not prefixed to it, but have subjoined it as a note.[1] From this advertisement, it is obvi-

edition. They occur chiefly in the 2nd and 3rd editions, and in the 6th, the last which the author revised. The 4th and 5th editions differ little from the 3rd.

[9] *Downame's Imprimatur.*] "March the 14th, 1645. I have perused these learned Animadversions upon the Common Tenets and Opinions of Men in former and in these present times, entitled *Pseudodoxia Epidemica*; and finding them much transcending vulgar conceipt, and adorned with great variety of matter, and multiplicity of reading, I approve them as very worthy to be printed and published.

JOHN DOWNAME."

[1] *An Advertisement, &c.*] "Reader, be pleased to understand, that upon the

ous that the superintendence of the edition had fallen into the hands of an admirer of the author, who was anxious to do him all the credit he could.[2]

The Third Edition, with some additions, appeared in folio, in 1658. It is printed on the model of the second, but is very inferior. The only variation in the title is in the number of the edition, and in the imprint:—*Printed by R. W. for Nath. Ekins, at the Gun in Paul's Church-yard.* 1658.

The Fourth Edition was printed in the same year, in 4to. with the Hydriotaphia and Garden of Cyrus—two Discourses which had just appeared in 8vo. The title is *Pseudodoxia, &c. The Fourth Edition, with Marginal Observations, and a Table Alphabetical. Whereunto are now added two Discourses:—the one of Urn Burial, or Sepulchrall Urns, lately found in Norfolk; the other, of the Garden of Cyrus, or Network Plantations of the Antients. Both newly written by the same Author. Ex libris, &c. London, Printed for Edward Dod, and are to be sould by Andrew Crook, at the Green Dragon in Paul's Church-yard.* 1658. No sooner had

second edition of this excellent piece (whereto the authour intendeth no further additions hereafter,) some strange hand hath attempted (yet sparingly, and but here and there,) to affix annotations on the margin, not imagining thereby to adde any lustre to the authour's text, but only to invite or fix the reader's eye upon some things (among as many other omitted) which he thought observable. They are distinguished from some other, which the authour himself hath been pleased to adde, by a smaller character, wherein they goe printed: and (that we doe the authour no wrong, by imposing something upon him, which it were not fit he should own,) this also must be added concerning them, viz:—that the reader would never judge of the authour's sense solely by the note in the margin, but (and that principally) by reflexion, and consideration of the text itself; wherein, according to the variety of the matter handled, and the authour's acute and cautious manner of discourse, the attentive reader will easily observe, in some things that he delivers himself positively, or in the way of direct and resolute assertion; in others more reservedly and with respect unto different judgements; he will observe some things argued for and concluded, some only insinuated or hinted at, others barely related; all which, in the right interpretation of the authour, ought to be distinguished, but could not well be distinguisht, that is, represented with their peculiar and respective qualifications in the brevity of a note.

There is also an Alphabeticall Table at the end, added by the same hand, and capable (perhaps) in some passages of the like caution. This only is desired of the ingenuous reader, both that himself may receive better satisfaction by what is done, and the learned authour lesse disservice. Farewell.

Cal. Nov. 1649. N. N."

[2] Very possibly this might be his neighbour and friend, the Rev. Mr. Whitefoot, of Norwich. He was a very likely person to have undertaken with alacrity such a task; and it is remarkable, that the initials following the *Advertisement*, (N. N.) are the same which he has employed in his *Arcanum Theologicum*, a MS. Discourse before noticed, as preserved in the British Museum. See notice respecting him in the *Life of Browne*, vol. i.

Dod brought out this edition, so enriched, than Ekins, his former partner, printed, in double column, not only the Tracts appended by Dod, but also Religio Medici:—and thus, in 1659, produced, as altogether new, his unsold copies of the 3rd edition, with these enrichments, preceded by this title-page:—*Religio Medici: whereunto is added a Discourse of the Sepulchrall Urns, lately found in Norfolk. Together with the Garden of Cyrus; or the Quincunciall Lozenge, or Network Plantations of the Ancients, Artificially, Naturally, Mistically Considered. With sundry Observations. By Thomas Brown, Doctour of Physick. Printed for the good of the Commonwealth;*—the whole set forth with a new title-page to the volume, calling it *The last Edition*, with the date 1659.

The Fifth Edition, in 4to. by the Assigns of Dod, in 1669, is nearly a reprint of his Fourth, and contains the two Discourses. It is remarkable for having a portrait, (the first, I believe, which appeared,) of the author; but so different from all others I have seen, that it is not easy to suppose them to have had a common original. Mr. Ottley, of the British Museum, has had the kindness to give me his opinion as to the engraver, that it may probably have been executed by John Dunstall.

The Sixth Edition, published by Ekins, under the author's especial superintendence, and with his final revision and improvements,[3] and the last which appeared during his life-time, came out in 1672, in 4to. with this title:—*Pseudodoxia, &c. The Sixth and last Edition, corrected and enlarged by the Author, with many Explanations, Additions, and Alterations throughout. Together with many more Marginal Observations, and a Table Alphabetical at the end. Jul. Scalig. Ex libris, &c. London, Printed by J. R. for Nath. Ekins*, 1672. A portrait by Van Hove accompanied it; which, in all probability, had a common original with all the subsequent portraits:—viz. that of Van der Bane, published with the *Miscellany Tracts*, in 1683—that of White, with the *Works*, in 1686—that of Van der Gucht, with the *Posthumous Works*, in 1712—that of Trotter, in *Malcolm's Lives of Topographers*

[3] As declared in the Postscript—see p. 182. Of this edition there were *large papers*.

—together with a Mezzotinto, of which I have only seen one copy, in an illustrated "Blomfield's Norwich," in the Dean and Chapter's Library at Norwich—and a Dutch 4to. print, which probably accompanied a Dutch translation of the Works—and, lastly, our own, engraved by Mr. Edwards.

In 1686, Abp. Tenison published the folio volume, which contained the Seventh Edition of Pseudodoxia, Religio Medici, Hydriotaphia, and the Quincunx, together with the Miscellany Tracts, which he had himself first edited in 1683, (but of which many copies have a reprint title with the date 1684), with this title, in red and black ink:—*The Works of the learned Sir Thomas Brown, Knt. Doctor of Physick, late of Norwich, containing* I. *Enquiries into Vulgar and Common Errors.* II. *Religio Medici; with Annotations and Observations upon it.* III. *Hydriotaphia; or Urn Burial: Together with the Garden of Cyrus.* IV. *Certain Miscellany Tracts:*[4] *with Alphabetical Tables. London, Printed for Tho. Basset, Ric. Chiswell, Thos. Sawbridge, Charles Mearn, and Charles Brome.* 1686. The volume consists of 652 pages, viz:—titles, preface, and contents, 18 pp.—Ps. Ep. and table, 344 pp.—Rel. Med. with title and prefaces, 116 pp. Hydriotaphia and Urn Burial, with ditto, 60 pp. Tracts, &c. 114 pp.

I know of but three translations of Pseudodoxia: two of which are those of Grundal and Knorr, in 1668 and 1680, noticed before;[5] the third is a French translation, in 2 vol. 12mo. of the seventh edition.[6] I cannot say by whom it was made, unless by Peter Briot, the translator of Ricault's Ottoman Empire, and several other works into French.[7]

Watt mentions an edition of the Works of Browne in Latin, in 1682; but I have never seen it, nor any other mention of it. Peti, a mathematician, who wrote on comets, is mentioned[8] as having translated some part into Latin; and

[4] First edited by the Abp. in 1683. Many (if not most) copies have a reprint title, 1684.

[5] Preface to *Rel. Med.* p. xiii.

[6] With this title:—*Essai sur les Erreurs Populaires, ou Examen de plusieurs Opinions reçues comme vrayes, qui sont fausses ou douteuses. Traduit de l'Anglois de Thom. Brown, Chevalier et Docteur en Medecine. Nouvelle edition revue et corrigée. Ex libris &c. Jul. Scalig. A Paris, Chez. Briasson, rue Saint Jacques, à la Science et à l'Ange Gardien.* MDCCXXVIII. *Avec Approbation et privilège du Roy.* My copy of this work has also reprint titles, with the date 1753.

[7] See vol. i, p. 110.

[8] Vol. i, p. 113.

Isaac Gruter[9] corresponded with Sir Thomas, respecting a translation which he was preparing; but which I believe never appeared.

In 1652 our old enemy, Alexander Ross, again took up arms, and made an attack at the same time on our author, and on Lord Bacon, Dr. Harvey, and others, in his *Arcana Microcosmi.*[1] To assail at once three such men, must be admitted as a proof that Alexander was not wanting in spirit; and to say the truth, there is much amusement to be found in the volume.[2] He adheres to antiquity, "through thick and thin," as John Gilpin hath it; but in his very blunders and wrongheadedness, he often shews a quaintness and humour which not a little atones for them.

The next, and I believe the only other attack which appeared in print, was the *Still Gale* of John Robinson,[3] a

[9] Gruter published several of Lord Bacon's pieces in Latin; and Abp. Tenison, in his *Baconiana*, (Lond. 1679, sm. 8vo.) has given, at p. 221, several Latin letters on the subject, from Isaac Gruter to Dr. Rawley, similar to those mentioned at p. 351, vol. I.

[1] *Arcana Microcosmi: or, The hid Secrets of Man's Body discovered; in an Anatomical Duel between Aristotle and Galen concerning the Parts thereof: as also, by a discovery of the strange and marvellous Diseases, Symptomes and Accidents of Man's Body. With a Refutation of Doctor Brown's Vulgar Errors, the Lord Bacon's Natural History, and Doctor Harvy's Book de Generatione, Comenius, and Others; whereto is annexed a Letter from Doctor Pr. to the Author, and his Answer thereto, touching Doctor Harvy's Book de Generatione. By A. R. London, Printed by Tho. Newcomb, and are to bee sold by John Clark, entering into Mercers-Chappel, the lower end of Cheapside.* 1652. The title, preface, and contents, occupy 16 pp. Arcana, &c. 268 pp. and Latin Letters 8 pp. and there are 4 pp. of Title, Epistle, &c. to the Appendix, inserted between pp. 208 and 209.

[2] Dr. Kippis remarks, that "the *Arcana* is far from being so mean a piece as many have represented it. There is in it a great deal of vanity, and more spleen; but withal there wants not truth, learning, and some sense."

[3] He published in 1649 a work entitled *Miscellaneous Propositions and Quæres, by J. R. Dr. in Physick in Norwich*—with this motto: *Fabricanda Fabri Fimus*, enclosed in a wreath. *London, Printed for R. Royston, at the Angel in Ivie Lane.* That they are truly *Miscellaneous*, will be sufficiently proved by their enumeration: —1. of a Church. 2. of Ministers. 3. of Sacraments. 4. of Adam. 5. of Marriage. 6. of Sympathy. 7. of an Egge. 8. of Swimming or Floating. 9. of Remedies. 10. of Telesmes. From this work it appears, that he was an Independent, in his opinions on church government, and the ministerial office. He held marriage to be a civil, not a religious institution. He seems to have been a person of some acuteness, and his belief in Satanic agency, resembled that of his fellow citzen Sir Thomas, as appears by his last chapter on "Telesmes," whose effect in removing Epidemical diseases, "if any," he would ascribe "unto the Prince of the Air." This work he translated into Latin and published with two additional pieces, under the following title:—*Endoxa seu Questionum quarundam Miscellanearum examen probabile, ut et Lapis ad Altare, sive Exploratio Locorum paucorum difficiliorum S. Scripturæ, una cum Pseudodoxiæ Epidemicæ Ventilatione tranquilla, per Johannem Robinsonum, M.D.* (here occurs a rude wood cut of 3 faces, with this motto:) *Sunt variæ quamvis facies mentesque alienæ, Unus fit cordis nexus amore*

pompous and somewhat coxcombical personage, who calls himself "his fellow citzen and collegian." There was little in this *gale* to ruffle a far more excitable antagonist than Sir Thomas; and it seems to have died away unnoticed.

The present Edition is printed from the folio of 1686, and all the important variations of that edition, from preceding ones, are pointed out in notes. The fifth book contains some pages of new matter, from the MSS. in the British Museum.

In speaking of the notes which accompany it, I must first mention those marked *Wr.* They were written by Dr. Christopher Wren, Dean of Windsor, and father of the architect of St. Paul's, on the margins of a copy of the first edition. This copy, preserved in the Bodleian Library at Oxford, caught the attention of my very kind friend Dr. Bliss, who enabled me to obtain a transcript of the entire notes. I hope that in printing nearly the whole of these notes, I shall be allowed to have really enhanced both the interest and the value of this edition, by adding the very curious commentary of a learned and distinguished contemporary. In extent of reading, as well as in acuteness, the commentator was probably far inferior to Browne; but he went beyond him, though at the same time strongly resembling him, in a certain superstitious tinge of feeling, and in love of the marvellous; he was inclined to believe in astrology;[4] and was a regarder of dreams; of which a very curious instance is recorded in the *Parentalia,* as having been written by him on the margin of *Aubrey's Miscellanies,* cap. v, p. 52.[5] He, moreover, admired Sir Thomas for being (like

boni. Londini, &c. 1656. Two years afterwards the work made its appearance, with slight alterations, in English, under this title:—*Endoxa, or some probable Inquiries into Truth, both Divine and Humane; together with a Stone to the Altar, or short Disquisitions on a few difficult Places of Scripture; as also a Calm Ventilation of Pseudodoxia Epidemica, by John Robinson, Doctor of Physick, Translated and Augmented by the Author. (Four faces in a heart.)*

Though divers heads; faces averse you see;
Yet, for truth's sake, they all in heart agree.

London, printed by J. Streater, for Francis Tylor. 1658.

[4] As will appear from vol. iii, p. 34, note 5. See also his marvellous Story of the Wonderful Oak in the New Forest, vol. ii, 371.

[5] "Sir C. W. being at his father's home, *anno* 1651, at Knoyle, Wilts. dreamt that he saw a fight in a great market-place, which he knew not, where some were flying, and others pursuing; and among those that fled, he saw a kinsman of his, who went into Scotland to the king's army. They heard in the country that the

himself) a stout adherent to the falling fortunes of the Ptolemaic system of astronomy.

I had hoped, however, to render my edition of the *Vulgar Errors* still more acceptable to the public, by securing for it, throughout, the illustrative notes of one of our most able naturalists, Mr. Edward William Brayley, of the London Institution. I regret exceedingly to have but partially succeeded, on account of the very numerous and increasing engagements which have prevented him from supplying more than a portion of the illustrations he had proposed to contribute. My regret is heightened by the consciousness that the few notes I have been able here and there to insert, offer scarcely an apology for the want of Mr. Brayley's. I am, however, indebted to numerous other friends for occasional and valuable notices, which are distinguished by initials, as explained at the close of preface to vol. i. My own notes I have preferred to leave unmarked, rather than constantly repeat *Ed.* as in *Religio Medici.*

Browne has enumerated in his preface several works similar and anterior to his own.[6] Several others may here be mentioned; though many have very probably escaped my notice.

Espagne John d'. *Erreurs Populaires en Points Généraux qui concernent l'intelligence de la Religion.* To this work there is no date, nor do I find it in the British Museum, which contains several other of his works. He was a French protestant divine of the 17th century.

ΠΕΡΙΑΜΜΑ 'ΕΠΙΔΗ'ΜΙΟΝ: *or, Vulgar Errors in practice censured. Also the Art of Oratory,* composed for the be-

king was come into England, but wherenbout he was they could not tell. The next night his kinsman came to his father's at Knoyle, and was the first that brought the news of the fight at Worcester, fought Sep. 3.

"When Sir C. W. was at Paris, about 1665, he was taken ill and feverish, made but little water, and had a pain in his reins: he sent for a physician, who advised him to let blood, thinking he had a pleurisy; but bleeding much disagreeing with his constitution, he would defer it a day longer: that night he dreamt that he was in a place where palm-trees grew, (suppose Egypt) and that a woman in a romantick habit reached him dates. The next day he sent for dates, which cured him of the pain in his reins."

[6] See vol. ii, p. 179, 180. Respecting Primrose, *De Vulgi Erroribus*, I may add that his first edition was in Latin, Amst. 1639:—it was that which Wittie translated: subsequent editions appeared, and in 1668 one very much enlarged at Rotterdam; it was this which De Rostagny translated.

nefit of young students, cap. 8vo. Lond. *Royston*, 1659, pp. 112. To each of these little works there is also a separate title page; the former consists of 112, the latter of 128 pp. The *Vulgar Errours in practice censured* are, 1. That of reproaching red-haired men. 2. That of censuring some professions. 3. That of reproaching the feminine sex. 4. The neglect of many writers to defend the deity of Christ. 5. The vanity of epitaphs. 6. The running from one extreme in religion to another. 7. The common practice of railing against an adversary.

Ralph Battell. *Vulgar Errors in Divinity Removed*, Lond. 8vo, 1683, containing, with title, &c. pp. 152. These relate to, 1. Reprobation. 2. Kingly government. 3. God's house and service in it. 4. Man's will. 5. Man's redemption. 6. Praying by the Spirit.

Two works on popular superstitions, viz. *Traité des Superstitions*, by M. Thiers, published in 1679, and *L'Histoire Critique des pratiques superstitieuses qui ont séduit les peuples, et embarrassé les Savans*, by Pierre Le Brun, published in 2 vols. at Rouan, in 1702 and 1732,—were published together in 1733 in one vol. fol. with plates. One of these gives several figures of *mandrakes;*—see note on which, vol. ii, p. 350, note 8.

Fovargue Stephen. *A New Catalogue of Vulgar Errors*, 8vo. pp. 202, Camb. 1767. A work of slight pretension, and of slender merit; introduced by a preface somewhat flippant and in bad taste. Two of his errors had been already noticed by Sir Thomas Browne, and many of the rest are by no means generally received opinions.

Vulgar Errors, Lond. Debrett, [8vo. 1784.] A political pamphlet against Mr. Pitt, at the time of the coalition between Lord North and Mr. Fox. The "Errors" enumerated are six:—1. That the union between Lord North and Mr. Fox was interested, and without any public spirit to support it. 2. That Mr. Fox's India bill was a violation of charters. 3. That it was a confiscation of property. 4. That, in the issue of this contest, the people will take part against the House of Commons. 5. That the king must succeed in the struggle by dissolving parliament. 6. That the opposition to

the present ministers has been carried on with violence. These six positions the author terms "Vulgar Errors," and professes to disprove.

A notice of some Vulgar Errors, as to points of law, will be found in *Burrington on the Statutes*, 4to. 1775, p. 474.

S. W.

London, June 17, 1835.

Notwithstanding the unreasonable length of time which has elapsed since this edition of Browne's Works was undertaken,[7] there still occur materials which, had they been earlier detected, might have been interwoven. In the Sloanian MSS. in the British Museum, No. 1839, there is a very neatly-written MS. extending to 85 pages, 4to., of *Observations on Ps. Ep.* which is proved, by a letter in vol. i, p. 370, to have proceeded from the pen of Sir Hamon L'Estrange.

The knight commences by thus expressing his admiration of his author:—"Boterus, magnifying the latitude of the pope's power, sayes that he hath *una jurisditione che no conosce oriente*, 'a command that knows no east,' and another dedicates a booke to the king of Spaine, thus, 'To the great king, to whom the sun never sets.' I cannot but prædicate the vast expanse of the Dr's. learning, reading, and knowledge, from the cedar to the hyssope." He then begins his observations by pointing out, in Browne's chapter on magnetism and the compass, several remarks which had not been made by previous writers;—Borough, Norman, or Gilbert. He goes on successively to notice Browne's remarks on electricity, flies in amber, white powder, and the rose of Jericho. After noticing, in connection with this last topic, several marvellous stories of omens, apparitions, and miracles, (among which this one, told to the writer, by the old Countess of Arundel, respecting her father, Lord Dacre of the North, that he had a pasture on the scite of an old abbey, and that his sheep never failed, if within that scite, to produce twins:)—he thus proceeds. "And I see no barr against mee to think that in the dayes of darkness and ignorance of popery, some cloysterers might truck with the devil (att a deare rate) for an ape's trick (as witches do) for the shewing, effecting, and continuance of such pranks and toyes, whereby to acquire a stupendous reputation of working miracles (of which they were not a little ambitious,) to drawe affection, respect, and honour, to their religion and profession, and to celebrate the place with a mark and cha-

[7] More than eleven years.

racter of extraordinary sanctity for the future," p. 6. After touching upon *Deer casting their horns*, he mentions, on the subject of *Griffins*, having seen in Sir Rob. Cotton's library *a griffin's claw*, p. 7. Discussing the story of the *ostrich* swallowing iron, he mentions having seen one eat pellets of chewed paper as large as a walnut. He gives also, as a parallel, the following story:—"About 1638, as I walked London streets, I sawe the picture of a strange fowle hang out upon a .....[8] and my selfe, with one or two more then in company, went in to see it. It was kept in a chamber, and was a great fowle, somewhat bigger than the largest turkey-cock, and so legged and footed, but shorter and thicker, and of a more erect shape, coulourd before like the breast of yong cock fesan, and on the back of dunn or deare coulour. The keeper called it a Dodo, and in the ende of a chimney in the chamber there lay an heap of large pebble stones, whereof hee gave it many in our sight, some as bigg as nutmegs, and the keeper told us shee eate them, conducing unto digestion; and though I remember not how far the keeper was questioned herein, yet I am confident that afterwards he cast them all agayne." He goes on to mention other instances of birds swallowing stones, &c. for the same purpose—which he concludes to be the most probable solution of the alleged fact that the ostrich (or estridge, as he calls it,) swallowing iron, pp. 8—12. Then follows a lengthened notice of the five kinds of one-horned animals noticed by Browne;—the *Indian ox* and *ass*, the *oryx*, *rhinoceros*, and *monoceros*. His opinion is that three "might exist; some one or more of several sorts of monsters in nature, through some errour or vitiosity in generation or conception, which might bear one horne; and such a creature once seen might multiply fast enough in report, and *(ex traduce)* naturalists readily follow one another, as wild geese flye." He concludes the unicorn of Job to be the *rhinoceros*, after many pages of careful and argumentative examination of his "shape and strength, and the seate, position, and portage of his horne," pp. 13—26. At p. 27, we find the notice (adverted to in his letter to Browne) of the *whale*, beginning thus: "In June, 1626, a whale was cast up upon my shoare or sea liberty, sometyme parcel of the possessions of the abbey of Ramsey, &c." Notices of the *dolphin*, the *toad and spider*, *seal*, *dottrel*, *basilisk*, *swallows in mud*, *&c.* occupy from p. 28 to p. 46:—from the last of which I must extract the following very lively incident—"About 16 or 20 years since, upon a hot, bright, and cleare daye, (a little before noone,) hapning in the midst of March, as I leaned over my garden wall, and looking steadfastly into my mote, (which is on that syde very cleare, leane, and hungry water,) I espied sundry small creatures (of a dark or dusky coulour, longwise shaped, and of forme of beetle or scarabee) to rise out of the mud from the bottom of the mote to the topp of the water, and some of them to settle themselves speedily downe againe into the mud, others to rayse themselves above the water

[8] A burnt hole occurs here in MS.

five or six inches, others a foote, others more, and some some yards, with a slanting or sloaping mount, and a like descent and falling downe hastened to the bottome;[9] and being much pleased with this speculation, I hastily rann unto mine house, and called out mine eldest sonne, (then a man growne and of yeares,) both to participate and bee a witnesse of this discovery; wee observed againe as before, and att last (among sundry essayes of many of these creatures, we perceived one of them to rise from the bottom to the top of the water, and found itselfe so full sunned and perfected as it raysed it selfe above the water, and after two or three turnes and circinations in the ayre, it mounted cleane out of sight," p. 40. He proceeds to remark on the *passenger falcon*, (p. 42, 43,) *toads found in oaks*, *shell stones*, (Pholas,) p. 44, *St. Hierome*, p. 46, and last, but not least, *Pope Joan*, whose existence he believes, and devotes the remaining forty pages of his paper to a most learned and ingenious examination of the arguments for and against the story—and still further to a discussion of the sense in which those Apocalyptic passages are to be understood—in which the whore of Babylon is foretold and denounced, concluded by a courteous expression of personal respect to many who are of that faith, pp. 47—85.

[9] I must suspect that the Knight was deceived, probably by reflection, as to "these creatures" (which must be supposed the larvæ of *libellulæ*, or dragon flies,) having mounted out of the water before they acquired their wings—or having returned into the water after they had once taken their leave of it.

TO THE READER.

WOULD truth dispense, we could be content, with Plato, that knowledge were but remembrance; that intellectual acquisition were but reminiscential evocation, and new impressions but the colourishing of old stamps which stood pale in the soul before.[1] For (what is worse) knowledge is made by oblivion, and, to purchase a clear and warrantable body of truth, we must forget and part with much we know;—our tender enquiries taking up learning at large, and, together with true and assured notions, receiving many, wherein our reviewing judgements do find no satisfaction. And therefore in this encyclopædie and round of knowledge, like the great and exemplary wheels of heaven, we must observe two circles; that, while we are daily carried about and whirled on by the swing and rapt of the one, we may maintain a natural and proper course in the slow and sober wheel of the other. And this we shall more readily perform, if we timely survey our knowledge; impartially singling out those encroachments which junior compliance and popular credulity hath admitted. Whereof at present we have endeavoured a long and serious adviso; proposing not only a large and copious list, but from experience and reason attempting their decisions.

And first we crave exceeding pardon in the audacity of the attempt; humbly acknowledging a work of such concernment unto truth, and difficulty in itself, did well deserve the con-

[1] *the colourishing, &c.*] "The pictures drawn in our minds are laid in fading colours; and if not sometimes refreshed, vanish and disappear."—*Locke.*

junction of many heads. And surely more advantageous had it been unto truth, to have fallen into the endeavours of some co-operating advancers, that might have performed it to the life, and added authority thereto; which the privacy of our condition, and unequal abilities cannot expect. Whereby notwithstanding we have not been diverted; nor have our solitary attempts been so discouraged, as to despair the favourable look of learning upon our single and unsupported endeavours.

Nor have we let fall our pen upon discouragement of contradiction, unbelief, and difficulty of dissuasion from radicated beliefs, and points of high prescription; although we are very sensible how hardly teaching years do learn, what roots old age contracteth unto errors, and how such as are but acorns in our younger brows grow oaks in our elder heads, and become inflexible unto the powerfullest arm of reason. Although we have also beheld, what cold requitals others have found in their several redemptions of truth; and how their ingenuous enquiries have been dismissed with censure, and obloquy of singularities.[2]

Some consideration we hope from the course of our profession, which though it leadeth us into many truths that pass undiscerned by others, yet doth it disturb their communications, and much interrupt the office of our pens in their well intended transmissions. And therefore surely in this work attempts will exceed performances; it being composed by snatches of time, as medical vacations, and the fruitless importunity of uroscopy* would permit us.[3] And therefore also, perhaps it hath not found that regular and constant style, those infallible experiments, and those assured determinations, which the subject sometime requireth, and might be expected from others, whose quiet doors and unmolested hours afford no such distractions. Although whoever shall indifferently perpend the exceeding difficulty, which either the obscurity of the subject or unavoidable paradoxology must often put upon the attemptor, he will easily discern a work of this nature is

* Inspection of urines.

[2] *Although we have also beheld, &c.*] Nota justam Doctoris querimoniam.—*Hr.*

[3] *fruitless importunity, &c.*] See book i, chap. 3.

not to be performed upon one legg; and should smell of oyle, if duly and deservedly handled.

Our first intentions, considering the common interest of truth, resolved to propose it unto the Latin republick and equal judges of Europe, but, owing in the first place this service unto our country, and therein especially unto its ingenuous gentry, we have declared ourselves in a language best conceived. Athough I confess the quality of the subject will sometimes carry us into expressions beyond mere English apprehensions.[4] And, indeed, if elegancy still proceedeth, and English pens maintain that stream we have of late observed to flow from many, we shall, within few years, be fain to learn Latin to understand English, and a work will prove of equal facility in either.[5] Nor have we addressed our pen or style unto the people, (whom books do not redress, and [who] are this way incapable of reduction,) but unto the knowing and leading part of learning. As well understanding (at least probably hoping) except they be watered from higher regions, and fructifying meteors of knowledge, these weeds must lose their alimental sap, and wither of themselves. Whose conserving influence could our endeavours prevent, we should trust the rest unto the scythe of time, and hopeful dominion of truth.

We hope it will not be unconsidered, that we find no open tract, or constant manuduction in this labyrinth, but are oftimes fain to wander in the America and untravelled parts of truth.[6] For though, not many years past, Dr. Primrose hath made a learned discourse of Vulgar Errors in Physick,[7] yet

[4] *expressions beyond, &c.*] That our naturall English consistes for the moste parte of monosyllables, as appeares by the names of all creatures in our tounge and all our actions, and in all the parts of our bodye, except such things as wee have borrowed from other nations. Scarce one word of ten, in our common talke, is of more than one syllable. In this very shorte note which conteynes 60 words, there bee not above eleven (and those of Latin derivation) which are not (all of them) monosyllables.—*Wr.*

[5] *we shall within, &c.*] To which desirable end, it must be confessed, Browne has, in this work, used his best endeavours.—*Crossley, in London Mag.* vol. iv, p. 436.

[6] *America, &c.*] Little more than 150 years had elapsed since the discovery of America, of which many parts were still *untravelled* and unknown.—*Br.*

[7] *Dr. Primrose hath made, &c.*] The work here alluded to is the *De Vulgi Erroribus in Medicinâ*, of which there is a translation into French, by Rostagny, and another into English, by Dr. Wittie; the latter was published in 8vo. in 1651. Dr. James Primrose, the author, who wrote several other medical treatises,

have we discussed but two or three thereof. Scipio Mercurii hath also left an excellent tract in Italian, concerning Popular Errors; but, confining himself only unto those in physick, he hath little conduced unto the generality of our doctrine.[8] Laurentius Joubertus,[9] by the same title, led our expectation into thoughts of great relief; whereby, notwithstanding, we reaped no advantage, it answering scarce at all the promise of the inscription. Nor, perhaps (if it were yet extant), should we find any further assistance from that ancient piece of Andreas,*[1] pretending the same title. And, therefore, we are often constrained to stand alone against the strength of opinion, and to meet the Goliah and giant of authority, with contemptible pebbles and feeble arguments, drawn from the scrip and slender stock of ourselves. Nor have we, indeed, scarce named any author whose name we do not honour; and if detraction could invite us, discretion surely would contain us from any derogatory intention, where highest pens and friendliest eloquence must fail in commendation.

And therefore also we cannot but hope the equitable considerations, and candour of reasonable minds. We cannot expect the frown of theology herein; nor can they which behold the present state of things,[2] and controversy of points so long received in divinity, condemn our sober enquiries in

* περὶ τῶν ψευδῶς πεπιστευμένων, Athenæi, lib. 7.

likewise in Latin, was the son of Gilbert Primrose, or Primerose, D.D. a Scotch divine, minister of the French church in London, and chaplain to James I. He practised at Paris for some time and afterwards settled in Yorkshire.—*Br.*

[8] *Scipio Mercurii, &c.*] Not mentioned in the *first edition.*

"*Degli errori popolari d'Italia,*" 1603, by Girolamo Mercurii, who had assumed the name of Scipio, when travelling through Europe as a physician, after having thrown aside the religious habit of the Dominicans. This work is a verbose but amusing performance, containing much curious information relative to the opinions and customs of the period at which it was published, and usefully correcting many errors, though it inculcates others of equal magnitude.—*Br.*

[9] *Laurentius Joubertus, &c.*] The *Erreurs populaires touchant la Medicine,* of Laurent Joubert, first published at Bourdeaux, in 1579, is the most distinguished of all the works of that celebrated medical professor. It obtained immediate popularity, being reprinted ten times in six months. The levity of its style, and the nature of some of the subjects discussed in it, appear to have contributed in a great degree to its popularity.—*Br.*

[1] *Andreas.*] Nothing appears to be known of this work of Andreas', who was himself a physician, besides this reference to it by Athenæus. Concerning the author, see *Fabricius's Elenchus Medicorum Veterum; Biblioth. Græc.* vol. xiii, p. 57. —*Br.*

[2] *present state, &c.*] Written in 1645.

the doubtful appertinences of arts, and receptaries of philosophy. Surely philologers and critical discoursers, who look beyond the shell and obvious exteriours of things, will not be angry with our narrower explorations. And we cannot doubt, our brothers in physick (whose knowledge in naturals will lead them into a nearer apprehension of many things delivered) will friendly accept, if not countenance, our endeavours. Nor can we conceive it may be unwelcome unto those honoured worthies who endeavour the advancement of learning; as being likely to find a clearer progression, when so many rubs are levelled, and many untruths taken off, which passing as principles with common beliefs, disturb the tranquillity of axioms which otherwise might be raised. And wise men cannot but know, that arts and learning want this expurgation; and if the course of truth be permitted unto itself, like that of time and uncorrected computations,[3] it cannot escape many errors, which duration still enlargeth.

Lastly, we are not magisterial in opinions, nor have we dictator-like[4] obtruded our conceptions; but, in the humility of enquiries or disquisitions, have only proposed them unto more ocular discerners. And therefore opinions are free; and open it is for any to think or declare the contrary. And we shall so far encourage contradiction, as to promise no disturbance, or re-oppose any pen, that shall fallaciously or captiously[5] refute us; that shall only lay hold of our lapses, single out digressions, corollaries, or ornamental conceptions, to evidence his own in as indifferent truths. And shall only take notice of such, whose experimental and judicious knowledge shall solemnly look upon it; not only to destroy of ours, but to establish of his own; not to traduce or extenuate, but to explain and dilucidate, to add and ampliate, according to the laudable custom of the ancients in their sober promotions of learning. Unto whom notwithstanding, we shall not contentiously rejoin, or only to justify our own, but to applaud or confirm his maturer assertions; and shall confer what is in

[3] *time, &c.*] Dean Wren, in a long note on this passage, proposes methods of correcting the calendar: but as the correction has long ago been made, the interest of the note appears to me scarcely to equal its length; I have therefore omitted it.

[4] *dictator-like, &c.*] Ut Julius Cæsar Scaliger in literis dictaturam arripuit.—*Wr.*

[5] *fallaciously.*] *Elenchically*, in *first ed.*

us unto his name and honour: ready to be swallowed in any worthy enlarger;—as having acquired our end, if any way, or under any name, we may obtain a work, so much desired, and yet desiderated,[6] of truth.

THOMAS BROWNE.

THE POSTSCRIPT.[7]

READERS,

To inform you of the advantages of the present impression, and disabuse your expectations of any future enlargements;—these are to advertise you, that this edition comes forth with very many explanations, additions, and alterations throughout, besides that of one entire chapter; and now this work is compleat and perfect, expect no further additions.

[6] *desired and yet desiderated, &c.*] The first edition reads, "desired, *at least* desiderated." Dean Wren in the margin asks, "What's the difference?" By collectors, every thing which they do not possess is classed among *desiderata*, whether *desirable* for its rarity or not: Browne evidently meant to say, that his work was *at least* among the *desiderata* of literature, if not *desired* or *desirable*.

[7] POSTSCRIPT.] To the sixth edition; the last published in the author's life.

Pseudodoxia Epidemica.

THE FIRST BOOK,

CONTAINING THE GENERAL PART.

CHAPTER I.

Of the first Cause of Common Errors; the common infirmity of Human Nature.

The first and father cause of common error is the common infirmity of human nature; of whose deceptible condition, although, perhaps, there should not need any other eviction than the frequent errors we shall ourselves commit, even in the express declarement hereof, yet shall we illustrate the same from more infallible constitutions, and persons presumed as far from us in condition as time, that is, our first and ingenerated forefathers. From whom, as we derive our being, and the several wounds of constitution, so may we in some manner excuse our infirmities in the depravity of those parts, whose traductions were pure in them, and their originals but once removed from God. Who, notwithstanding, (if posterity may take leave to judge of the fact, as they are assured to suffer in the punishment,) were grossly deceived in their perfection, and so weakly deluded in the clarity of their understanding, that it hath left no small obscurity in ours, how error should gain upon them.

For first, they were deceived by Satan; and that not in an invisible insinuation, but an open and discoverable apparition, that is, in the form of a serpent; whereby, although there

were many occasions of suspicion, and such as could not easily escape a weaker circumspection, yet did the unwary apprehension of Eve take no advantage thereof. It hath therefore seemed strange unto some, she should be deluded by a serpent, or subject her reason to a beast, which God had subjected unto hers. It hath empuzzled the enquiries of others to apprehend, and enforced them unto strange conceptions, to make out, how without fear or doubt she could discourse with such a creature, or hear a serpent speak, without suspicion of imposture.[1] The wits of others have been so bold as to accuse her simplicity, in receiving his temptation so coldly; and, when such specious effects of the fruit were promised as to make them like gods, not to desire, at least not to wonder, he pursued not that benefit himself. And had it been their own case, would perhaps have replyed, if the taste of this fruit maketh the eaters like Gods why remainest thou a beast? If it maketh us but *like* gods, we are so already. If thereby our eyes shall be opened hereafter, they are at present quick enough to discover thy deceit; and we desire them no opener to behold our own shame. If to know good and evil be our advantage, although we have free will unto both, we desire to perform but one. We know 'tis good to obey the commandment of God, but evil if we transgress it.

They were deceived by one another, and in the greatest disadvantage of delusion, that is, the stronger by the weaker: for Eve presented the fruit, and Adam received it from her. Thus the serpent was cunning enough to begin the deceit in the weaker; and the weaker of strength sufficient to consummate the fraud in the stronger. Art and fallacy was used unto her; a naked offer proved sufficient to him; so his superstruction was his ruin, and the fertility of his sleep an issue of death unto him. And although the condition of sex, and posteriority of creation, might somewhat extenuate the error of the woman, yet was it very strange and inexcusable in the man: especially, if, as some affirm, he was the wisest of all men since; or if, as others have conceived, he was not ignorant of the fall of the angels, and had thereby example and punishment to deter him.

[1] *how without fear, &c.*] See *Religio Medici*, p. 15, *note* 9.

They were deceived from themselves, and their own apprehensions; for Eve either mistook, or traduced the commandment of God. "Of every tree of the garden thou maist freely eat, but of the tree of knowledge of good and evil thou shalt not eat: for in the day thou eatest thereof, thou shalt surely dye." Now Eve upon the question of the serpent, returned the precept in different terms: "You shall not eat of it, neither shall you touch it, lest perhaps you dye." In which delivery there were no less than two mistakes, or rather additional mendacities: for the commandment forbad not the touch of the fruit; and positively said, ye shall surely dye, but she extenuating replied, *ne forte moriamini*, lest perhaps ye dye. For so in the vulgar translation it runneth, and so it is expressed in the Thargum or paraphrase of Jonathan. And therefore although it be said, and that very truly, that the Devil was a lyer from the beginning, yet was the woman herein the first express beginner, and falsified twice, before the reply of Satan. And therefore also, to speak strictly, the sin of the fruit was not the first offence. They first transgressed the rule of their own reason, and after, the commandment of God.[2]

They were deceived through the conduct of their senses, and by temptations from the object itself; whereby although their intellectuals had not failed in the theory[3] of truth, yet did the inservient and brutal faculties controll the suggestion of reason: pleasure and profit already overswaying the instructions of honesty, and sensuality perturbing the reasonable commands of virtue. For so it is delivered in the text; that when the woman saw "that the tree was good for food," and "that it was pleasant unto the eye," and "a tree to be desired to make one wise, she took of the fruit thereof and did eat." Now hereby it appeareth, that Eve, before the fall, was by the same and beaten way of allurements inveigled, whereby her posterity hath been deluded ever since; that is, those three delivered by St. John, "the lust of the flesh, the lust of

[2] *and after, the commandment of God.*] As indeed none can transgress his commandment without first transgressing reason.—*Capel Loft.*

[3] *theory.*] Theorys, in Greeke signifies, search into the nature of things. —*Ir.*

the eye, and the pride of life:" where indeed they seemed as weakly to fail, as their debilitated posterity, ever after. Whereof, notwithstanding, some in their imperfection have resisted more powerful temptations, and in many moralities condemned the facility of their seductions.

Again, they might, for ought we know, be still deceived in the unbelief of their mortality, even after they had eat of the fruit. For, Eve observing no immediate execution of the curse, she delivered the fruit unto Adam; who after the taste thereof, perceiving himself still to live, might yet remain in doubt, whether he had incurred death; which perhaps he did not indubitably believe, until he was after convicted in the visible example of Abel. For he that would not believe the menace of God at first, it may be doubted whether, before an ocular example, he believed the curse at last. And therefore they are not without all reason, who have disputed the fact of Cain; that is, although he purposed to do mischief, whether he intended to kill his brother; or designed that, whereof he had not beheld an example in his own kind. There might be somewhat in it, that he would not have done, or desired undone, when he brake forth as desperately, as before he had done uncivilly, my iniquity is greater than can be forgiven me.[4]

Some niceties I confess there are which extenuate, but many more that aggravate this delusion; which exceeding the bounds of this discourse, and perhaps our satisfaction, we shall at present pass over. And therefore whether the sin of our first parents were the greatest of any since; whether the transgression of Eve seducing did not exceed that of Adam seduced; or whether the resistibility of his reason, did not equivalence the facility of her seduction, we shall refer it to the schoolman. Whether there was not in Eve as great injustice in deceiving her husband, as imprudence in being deceived herself, especially, if fore-tasting the fruit, her eyes

[4] "*My iniquity*," *&c.*] The authorized version gives the passage thus; "my *punishment* is greater than I can *bear*." Sir Thomas prefers the marginal reading, which he contrasts with the surly question of Cain, in the 9th verse;—"Am I my brother's keeper?"—Drs. Clarke and Robertson give the same meaning to the words of the sentence, but the former makes it interrogative:—"Is my *sin* too great to be *forgiven?*"

were opened before his, and she knew the effect of it, before he tasted of it, we leave it unto the moralist. Whether the whole relation be not allegorical, that is, whether the temptation of the man by the woman be not the seduction of the rational and higher parts by the inferior and feminine faculties; or whether the tree in the midst of the garden, were not that part in the centre of the body, in which was afterward the appointment of circumcision in males, we leave it unto the thalmudist.[5] Whether there were any policy in the devil to tempt them before the conjunction, or whether the issue, before tentation, might in justice have suffered with those after, we leave it unto the lawyer. Whether Adam foreknew the advent of Christ, or the reparation of his error by his Saviour; how the execution of the curse should have been ordered, if, after Eve had eaten, Adam had yet refused; whether, if they had tasted the tree of life, before that of good and evil, they had yet suffered the curse of mortality; or whether the efficacy of the one had not overpowered the penalty of the other, we leave it unto God. For he alone can truly determine these, and all things else; who, as he hath proposed the world unto our disputation, so hath he reserved many things unto his own resolution; whose determination we cannot hope from flesh, but must with reverence suspend unto that great day, whose justice shall either condemn our curiosities, or resolve our disquisitions.

Lastly, man was not only deceivable in his integrity, but the angels of light in all their clarity.[6] He that said, he would be like the highest, did err, if in some way he conceived not himself so already: but in attempting so high an effect from himself, he misunderstood the nature of God, and held a false apprehension of his own; whereby vainly attempting not only insolencies, but impossibilities, he deceived himself as low as hell. In brief, there is nothing infallible but God, who

[5] *whether the tree, &c.*] See the *Count de Gabalis*, p. 54, Lond. 1714. This is the theory of Hadrian Beverland's celebrated work, *De Peccato originali*, 1679, 8vo. It may be observed by the way, as a fact not generally known, that many curious papers and MSS. of this singular writer, throwing great light on that period of his life which he passed in England, may be found in the British Museum.—*J. C.*

[6] *Man was not only deceivable, &c.*] More correctly, "not only was man deceivable in his integrity, but the angels of light in all their clarity."

cannot possibly err. For things are really true, as they correspond unto His conception;[7] and have so much verity, as they hold of conformity unto that intellect, in whose idea they had their first determinations. And, therefore, being the rule, he cannot be irregular; nor, being truth itself, conceivably admit the impossible society of error.

CHAPTER II.

A further Illustration of the same.

BEING thus deluded before the fall, it is no wonder if their conceptions were deceitful, and could scarce speak without an error after. For, what is very remarkable (and no man that I know hath yet observed) in the relations of Scripture before the flood, there is but one speech delivered by man, wherein there is not an erroneous conception;[8] and, strictly examined, most heinously injurious unto truth. The pen of Moses is brief in the account before the flood, and the speeches recorded are but six. The first is that of Adam, when, upon the expostulation of God, he replied, "I heard thy voice in the garden, and, because I was naked, I hid myself." In which reply there was included a very gross mistake, and, if with pertinacity maintained, a high and capital error. For, thinking by this retirement to obscure himself from God, he infringed the omniscience and essential ubiquity of his maker: who, as he created all things, so is he beyond and in them all; not only in power, as under his subjection, or in his presence, as being in his cognition; but in his very essence, as being the soul of their causalities, and the essential cause of their existencies. Certainly, his posterity at this distance, and after so perpetuated an impair-

[7] *For things are really true as they correspond, &c.*] But not arbitrarily.—They conform to his conception, because they are true; and he seeth all things as they are; and maketh their physical constitution to be what it is: and knoweth the moral relations thereunto belonging according to eternal rectitude, which is his nature.—*Capel Loft.*

[8] *There is but one speech, &c.*] Adverting probably to the speech of Lamech at the birth of Noah.

ment, cannot but condemn the poverty of his conception, that thought to obscure himself from his Creator in the shade of the garden, who had beheld him before in the darkness of his chaos, and the great obscurity of nothing; that thought to fly from God, which could not fly himself; or imagined that one tree should conceal his nakedness from God's eye, as another had revealed it unto his own. Those tormented spirits that wish the mountains to cover them, have fallen upon desires of minor absurdity, and chosen ways of less improbable concealment. Though this be also as ridiculous unto reason, as fruitless unto their desires; for he that laid the foundations of the earth cannot be excluded the secrecy of the mountains; nor can there any thing escape the perspicacity of those eyes which were before light, and in whose optics there is no opacity. This is the consolation of all good men, unto whom his ubiquity affordeth continual comfort and security: and this is the infliction of hell, unto whom it affordeth despair and remediless calamity. For those restless spirits that fly the face of the Almighty, being deprived the fruition of his eye, would also avoid the extent of his hand; which, being impossible, their sufferings are desperate, and their afflictions without evasion; until they can get out of Trismegistus his circle, that is, to extend their wings above the universe, and pitch beyond ubiquity.

The second is that speech of Adam unto God, "The woman whom thou gavest me to be with me, she gave me of the tree, and I did eat." This indeed was an unsatisfactory reply, and therein was involved a very impious error, as implying God the author of sin, and accusing his maker of his transgression. As if he had said, "If thou hadst not given me a woman, I had not been deceived; thou promisedst to make her a help, but she hath proved destruction unto me: had I remained alone, I had not sinned; but thou gavest me a consort, and so I became seduced." This was a bold and open accusation of God, making the fountain of good the contriver of evil; and the forbidder of the crime, an abettor of the fact prohibited. Surely, his mercy was great, that did not revenge the impeachment of his justice; and his goodness to be admired, that it refuted not his argument in the

punishment of his excusation,[9] and only pursued the first transgression, without a penalty of this the second.

The third was that of Eve, "The serpent beguiled me, and I did eat." In which reply there was not only a very feeble excuse, but an erroneous translating her own offence upon another; extenuating her sin from that which was an aggravation, that is, to excuse the fact at all, much more upon the suggestion of a beast, which was before, in the strictest terms, prohibited by her God. For although we now do hope the mercies of God will consider our degenerated *integrities* unto some minoration of our offences; yet had not the sincerity of our first parents so colourable expectations, unto whom the commandment was but single, and their *integrities* best able to resist the motions of its transgression. And therefore so heinous conceptions have risen hereof, that some have seemed more angry therewith than God himself: being so exasperated with the offence, as to call in question their salvation, and to dispute the eternal punishment of their maker.[1] Assuredly with better reason may posterity accuse them, than they the serpent, or one another; and the displeasure of the Pelagians must needs be irreconcilable, who, peremptorily maintaining they can fulfil the whole law, will insatisfactorily[2] condemn the non-observation of one.

The fourth was that speech of Cain, upon the demand of God, "Where is thy brother?" and he said, "I know not." In which negation, beside the open impudence, there was implyed a notable error; for, returning a lie unto his maker, and presuming in this manner to put off the searcher of hearts, he denied the omnisciency of God, whereunto there is nothing concealable. The answer of Satan, in the case of Job, had more of truth, wisdom, and reverence than this: "Whence comest thou, Satan?" and he said, "From compassing the earth." For, though an enemy of God, and hater of all truth, his wisdom will hardly permit him to falsifie with

[9] *his goodness to be admired, &c.*] Meaning that God's goodness withheld him from proving himself *just*, by punishing Adam for his implied charge of *injustice*.

[1] *to dispute the eternal punishment of their maker.*] To dispute his justice in inflicting for the offence of our first parents, eternal punishment on their posterity.

[2] *insatisfactorily.*] i. e. unappeasably. —*Wr.*

the Almighty. For, well understanding the omniscience of his nature, he is not so ready to deceive himself as to falsifie unto him, whose cognition is no way deludable. And, therefore, when in the tentation of Christ he played upon the fallacy, and thought to deceive the author of truth, the method of this proceeding arose from the uncertainty of his divinity; whereof had he remained assured, he had continued silent, nor would his discretion attempt so unsucceedable a temptation. And so again at the last day, when our offences shall be drawn into accompt, the subtilty of that inquisitor shall not present unto God a bundle of calumnies or confutable accusations, but will discreetly offer up unto his omnisciency a true and undenyable list of our transgressions.[3]

The fifth is another reply of Cain, upon the denouncement of his curse: "My iniquity is greater than can be forgiven;" for so it is expressed in some translations. The assertion was not only desperate, but the conceit erroneous, overthrowing that glorious attribute of God, his mercy, and conceiving the sin of murder unpardonable. Which, how great soever, is not above the repentance of man, but far below the mercies of God, and was (as some conceive) expiated in that punishment he suffered temporally for it. There are but two examples of this error[4] in Holy Scripture, and they both for murder, and both as it were of the same person; for Christ was mystically slain in Abel, and, therefore, Cain had some influence on his death, as well as Judas; but the sin had a different effect on Cain from that it had on Judas; and most that since have fallen into it. For they, like Judas, desire death, and not unfrequently pursue it. Cain on the contrary, grew afraid thereof, and obtained a securement from it. Assuredly, if his despair continued, there was punishment enough in life, and justice sufficient in the mercy of his protection. For the life of the desperate equalls

[3] *And so again at the last day, &c.*] Here is an evident allusion to that singular passage in which Satan is spoken of as the *accuser* of the *brethren*, which accused them before God day and night. But surely it would be incorrect to conclude from thence, that he will stand up at the judgment day as the accuser of *all men*. On the contrary, we are expressly told that men will then be judged, "according to those things which were written in the books."

[4] *this error.*] Namely, despair of God's mercy.

the anxieties of death; who in uncessant inquietudes, but act the life of the damned, and anticipate the desolations of hell. 'Tis indeed a sin in man, but a punishment only in devils; who offend not God, but afflict themselves, in the appointed despair of his mercies. And, as to be without hope is the affliction of the damned, so is it the happiness of the blessed; who having all their expectations present, are not distracted with futurities. So is it also their felicity to have no faith; for enjoying the beatifical vision, there is nothing unto them inevident; and in the fruition of the object of faith, they have received the full evacuation of it.

The last speech was that of Lamech, "I have slain a man to my wound, and a young man to my hurt: If Cain be avenged seven fold, truly Lamech seventy and seven fold." Now herein there seems to be a very erroneous illation: from the indulgence of God unto Cain concluding an immunity unto himself; that is, a regular protection from a single example, and an exemption from punishment in a fact that naturally deserved it. The error of this offender was contrary to that of Cain, whom the Rabbins conceive that Lamech at this time killed. He despaired of God's mercy in the same fact, where this presumed of it; he by a decollation of all hope annihilated his mercy, this by an immoderancy thereof destroyed his justice. Though the sin were less, the error was as great: for, as it is untrue that his mercy will not forgive offenders, or his benignity co-operate to their conversions, so is it also of no less falsity to affirm His justice will not exact account of sinners, or punish such as continue in their transgressions.

Thus may we perceive how weakly our fathers did err before the flood; how continually, and upon common discourse, they fell upon errors after; it is therefore no wonder we have been erroneous ever since. And being now at greatest distance from the beginning of error, are almost lost in its dissemination, whose ways are boundless, and confess no circumscription.

CHAPTER III.

Of the second Cause of Common Errors; the erroneous Disposition of the People.

HAVING thus declared the fallible nature of man, even from his first production, we have beheld the general cause of error. But as for popular errors, they are more nearly founded upon an erroneous inclination of the people; as being the most deceptable part of mankind, and ready with open arms to receive the encroachments of error. Which condition of theirs, although deducible from many grounds, yet shall we evidence it but from a few, and such as most nearly and undeniably declare their natures.

How unequal discerners of truth they are, and openly exposed unto error, will first appear from their unqualified intellectuals, unable to umpire the difficulty of its dissentions. For error, to speak largely, is a false judgement of things, or an assent unto falsity. Now, whether the object whereunto they deliver up their assent be true or false, they are incompetent judges.

For the assured truth of things is derived from the principles of knowledge, and causes which determine their verities. Whereof their uncultivated understandings scarce holding any theory, they are but bad discerners of verity, and in the numerous track of error, but casually do hit the point and unity of truth.

Their understanding is so feeble in the discernment of falsities, and averting the errors of reason, that it submitteth to the fallacies of sense, and is unable to rectifie the error of its sensations. Thus the greater part of mankind, having but one eye of sense and reason, conceive the earth far bigger than the sun, the fixed stars lesser than the moon, their figures plain, and their spaces from the earth equidistant. For thus their sense informeth them, and herein their reason cannot rectifie them; and, therefore, hopelessly continuing in mistakes, they live and die in their absurdities; passing their

dayes in perverted apprehensions and conceptions of the world, derogatory unto God and the wisdom of the creation.

Again, being so illiterate in the point of intellect, and their sense so incorrected, they are further indisposed ever to attain unto truth; as commonly proceeding in those wayes, which have most reference unto sense, and wherein there lyeth most notable and popular delusion.

For, being unable to wield the intellectual arms of reason, they are fain to betake themselves unto wasters,[5] and the blunter weapons of truth: affecting the gross and sensible ways of doctrine, and such as will not consist with strict and subtile reason. Thus unto them a piece of rhetorick is a sufficient argument of logick; an apologue * of Æsop, beyond syllogisms in barbara,[6] parables than propositions, and proverbs more powerful than demonstrations. And therefore are they led rather by example than precept; receiving persuasions from visible inducements, before intellectual instructions. And, therefore also, they judge of human actions by the event; for, being uncapable of operable circumstances,[7] or rightly to judge the prudentiality of affairs, they only gaze upon the visible success, and, therefore, condemn or cry up the whole progression. And so, from this ground, in the lecture of Holy Scripture, their apprehensions are commonly confined unto the literal sense of the text, from whence have ensued the gross and duller sort of heresies. For not attaining the deuteroscopy,[8] and second intention of the words,

* Fable.

[5] *wasters.*] A kind of cudgel.

[6] *syllogisms in barbara.*] *Barbara*, among logicians, the first mode of the first figure of syllogism. A syllogism in *barbara*, is one whereof all the propositions are universal and affirmative; the middle term being the subject of the first proposition, and attribute in the second.

Example:—

bar—Every wicked man is miserable:
ba —All tyrants are wicked men:
ra —Therefore all tyrants are miserable.—*Enc. Brit.*

[7] *uncapable of operable circumstances.*] "Not capable of judging what is to be done under any given circumstances." This passage is Dr. Johnson's solitary authority for the word *operable*, which he observes is *not in use*.

[8] *deuteroscopy.*] i. e. the inward and spiritual meaning, which is sometimes

Allegorical, and by a continual metaphor or allusion, or similitude or parable, proposes the greatest depths of divinitye:—

Tropological, tending to the reformation of the manners and life of a Christian: as by the forbidding of swine's flesh, expressing God's detestation of all filthiness in the flesh and the spirit:—

Anagogicall; inducing us by the vilitye, unstabilitye, and vexatious fruition of earthly things to the love of that future blisse, wherein shall bee noe defect, noe change, noe dislike for ever.—*Wr.*

they are fain to omit the super-consequences, coherences, figures, or tropologies: and are not sometimes persuaded by fire[9] beyond their literalities. And, therefore also, things invisible but unto intellectual discernments, to humour the grossness of their comprehensions, have been degraded from their proper forms, and God himself dishonoured into manual expressions.[1] And so likewise being unprovided, or unsufficient for higher speculations, they will always betake themselves unto sensible representations, and can hardly be restrained the dulness of idolatry. A sin or folly not only derogatory unto God but men; overthrowing their reason, as well as his divinity. In brief, a reciprocation, or rather an inversion of the creation, making God one way, as he made us another; that is, after our image,[2] as he made us after his own.

Moreover, their understanding, thus weak in itself, and perverted by sensible delusions, is yet farther impaired by the dominion of their appetite; that is, the irrational and brutal part of the soul, which, lording it over the sovereign faculty, interrupts the actions of that noble part, and choaks those tender sparks, which Adam hath left them of reason. And, therefore, they do not only swarm with errors, but vices depending thereon. Thus they commonly affect[3] no man any further than he deserts his reason, or complies with their aberrancies. Hence they embrace not virtue for itself, but its reward; and the argument from pleasure or utility is far more powerful than that from virtuous honesty: which Mahomet and his contrivers well understood, when he set out the felicity of his heaven, by the contentments of flesh and the delight of sense, slightly passing over the accomplishment of the soul, and the beatitude of that part which earth and visi-

[9] *by fire.*] He seems to refer to *the stake*. But, surely, martyrdom has, in a vast majority of instances, been undergone in defence of truth, rather than from ignorant adherence to *vulgar error*.

[1] *God himself dishonoured into manual expressions.*] On the ancient heresy of the *Anthropomorphites*, who ascribed to the Almighty a bodily shape, see *Augustin. Contra Epist. Manichæi*, c. 23;—*Epiphanius*, tom. i, lib. iii, *Hæres.* 70; *Theodoret.* lib. iv, c. 10. In 1654, this extraordinary error was advocated by Mr. J. Biddle, in his "*Briefe Scripture Catechisme*," which produced a reply in the following year from the celebrated Dr. Owen, his *Vindiciæ Evangelicæ*, or, *The Mystery of the Gospel Vindicated*.

[2] *image.*] i. e. *imagination.*—*Wr.*

[3] *affect.*] In the sense of "being pleased with."

bilities too weakly affect. But the wisdom of our Saviour, and the simplicity of his truth proceeded another way; defying the popular provisions of happiness from sensible expectations; placing his felicity in things removed from sense, and [in] the intellectual enjoyment of God. And, therefore, the doctrine of the one was never afraid of universities, or endeavoured the banishment of learning, like the other. And though Galen doth sometimes nibble at Moses, and, beside the apostate Christian,* some heathens have questioned his philosophical part, or treaty[a] of the creation, yet is there surely no reasonable pagan that will not admire the rational and well grounded precepts of Christ; whose life, as it was conformable unto his doctrine, so was that unto the highest rules of reason, and must therefore flourish in the advancement of learning, and the perfection of parts best able to comprehend it.

Again, their individual imperfections being great, they are, moreover, enlarged by their aggregation; and being erroneous in their single numbers, once huddled together, they will be error itself. For, being a confusion of knaves and fools, and a farraginous concurrence of all conditions, tempers, sexes, and ages, it is but natural if their determinations be monstrous, and many ways inconsistent with truth. And, therefore, wise men have always applauded their own judgement, in the contradiction of that of the people; and their soberest adversaries have ever afforded them the style of fools and mad men; and, to speak impartially, their actions have made good these epithets. Had Orestes been judge, he would not have acquitted that Lystrian rabble of madness,† who,—upon a visible miracle falling into so high a conceit of Paul and Barnabas, that they termed the one Jupiter, the other Mercurius, that they brought oxen and garlands, and were hardly restrained from sacrificing unto them,—did, notwithstanding, suddenly after fall upon Paul, and, having stoned him, drew him for dead out of the city. It might have hazarded the sides of Democritus, had he been present at

* Julian. † Non sani esse hominis, non sanus juret Orestes.

[a] *treaty.*] In the sense of *treatise*; but the word is obsolete.—*Wr.*

that tumult of Demetrius; when the people flocking together in great numbers, some crying one thing and some another, and the assembly was confused, and the most part knew not wherefore they were come together, notwithstanding, all with one voice, for the space of two hours, cried out, "Great is Diana of the Ephesians." It had overcome the patience of Job, as it did the meekness of Moses, and would surely have mastered any but the longanimity and lasting sufferance of God, had they beheld the mutiny in the wilderness; when, after ten great miracles in Egypt, and some in the same place, they melted down their stolen [5] ear-rings into a calf, and monstrously cried out, "These are thy gods, O Israel, that brought thee out of the land of Egypt." It much accuseth the impatience of Peter, who could not endure the staves of the multitude, and is the greatest example of lenity in our Saviour, when he desired of God forgiveness unto those, who having one day brought him into the city in triumph, did presently after act all dishonour upon him, and nothing could be heard but *crucifige* in their courts. Certainly, he that considereth these things in God's peculiar people, will easily discern how little of truth there is in the ways of the multitude; and though sometimes they are flattered with that aphorism, will hardly believe "The voice of the people to be the voice of God."

Lastly, being thus divided from truth in themselves, they are yet farther removed by advenient deception. For true it is (and I hope I shall not offend their vulgarities if I say) they are daily mocked into error by subtiler devisors, and have been expressly deluded by all professions and ages. Thus the priests of elder time have put upon them many incredible conceits, not only deluding their apprehensions with ariolation, soothsaying,[6] and such oblique idolatries, but winning their credulities unto the literal and downright adorement of cats,

[5] *stolen.*] Neither *stolen* nor *borrowed*, but *freely given* to the solicitations of the Israelites, to whom "The Lord had given favour in the sight of the Egyptians." The LXX and Vulgate, with the Syriac, Chaldee, Samaritan, Coptic, and Persian all agree in this interpretation of Exod. iii, 22, and xii, 35, 36. The idea of dishonesty so universally attached to this transaction, in consequence of our unfortunate version of the passages, is a *vulgar error*, which cannot be too generally corrected.

[6] *ariolation, soothsaying.*] Synonimous terms.

lizards, and beetles.[7] And thus also in some Christian churches (wherein is presumed an irreprovable truth) if all be true that is suspected, or half what is related, there have not wanted many strange deceptions, and some thereof are still confessed by the name of pious frauds.[8] Thus Theudas,[9] an

[7] *adorement of cats, lizards, and beetles.*] This, no doubt, is an allusion to the ancient Egyptians, by whom all these animals were worshipped, but whether as *incarnations* or as mere *symbols* of certain divinities, it seems difficult to determine. It would, indeed, appear probable, that the animals which were at first worshipped in Egypt, as representative symbols only of the deities to whom they were respectively sacred, were in the progress of idolatry adored as manifestations upon earth of those divinities themselves. The CAT, many embalmed bodies of which animal have been found in the Egyptian sepulchres, appears to have been sacred either to Isis or to her half-sister Nephthys. In mentioning the worship of LIZARDS, the author doubtless alludes to that of the Crocodile, the affinity of which to the Lizard was observed and recorded by the Greek writers, who, when travelling in Egypt, bestowed on that animal, called *temsah* by the natives, the name of Κροκοδειλος, previously applied to a lizard, common in Greece. Strabo, relating his own observations, states, that "in the city of Arsinoë, which was formerly called Crocodilopolis, (in Upper Egypt, now called Medinet-el-Fay-yúm,) the crocodile is worshipped, and a sacred crocodile is kept in a pond, who is perfectly tame, and familiar with the priests. He is called Suchus; they feed him with corn, and meat, and wine, which are continually brought him by strangers." One of the Egyptian divinities, apparently that to whom the crocodile was consecrated, was pictured as having a crocodile's head; and is denoted, in the hieroglyphic inscriptions, by a representation of that animal with the tail turned under it. The BEETLE was regarded by the Egyptians as the symbol of a particular personification of Phthah, the father of the Gods; that insect is used in hieroglyphics for the name of this deity, whose head in the pictural representations of him, either bears a beetle, or is itself in the form of a beetle; and in other instances the beetle, in hieroglyphics, has clearly a reference to generation or reproduction, which is a sense attributed to this symbol by all antiquity, and from which Dr. Young, in his hieroglyphical researches, inferred its relation to Phthah; an inference since confirmed by the inquiries of Champollion. The Egyptians embalmed and preserved all the animals they adored; and in the Royal Egyptian Museum at Berlin, are some mummies of the sacred beetle. In these instances of the worship of animals, however, it may be questioned whether the priests who conducted it were not themselves the subjects of delusion, in a degree equal to, or perhaps greater than, that of their followers. Possibly, therefore, they were not *wholly* deserving of the censure cast upon them by our author.—*Br.*

[8] *And thus also, &c.*] It would be easy to justify the charge which is only insinuated in this sentence, by a host of examples of the monkish trickery of pretended miracles and relicks. But the task would be endless; and surely it is becoming daily less necessary to contradict what is daily less believed. It happened to the editor, some years since, to visit the cathedral of Aachen (*Gallice, Aix-la-Chapelle*), where, among a profusion of relicks, was exhibited a *fragment* of one of the nails used in the crucifixion: and we were gravely assured by the priest in attendance, that *the other part* of that nail was in the cathedral of Nostre Dame, at Paris. There, accordingly, we made a point of inquiring for it, but in vain; our guide averred that there was no such bit of nail among the relicks of the place, nor ever had been!

[9] *Theudas.*] Theudas or Theodas was a Jewish impostor and magician, in the first century of the Christian church, who so well deluded the people as to collect together above four hundred (not *thousand*) men, whom he persuaded to quit the town; assuring them that he could dry up the waters of the Jordan by speaking a single word. His followers, however, were exterminated, and Theudas

impostor, was able to lead away four thousand into the wilderness; and the delusions of Mahomet almost the fourth part of mankind. Thus all heresies, how gross soever, have found a welcome with the people. For thus many of the Jews were wrought into the belief that Herod was the Messias:[1] and David George, of Leyden,[2] and Arden, were not without a party amongst the people, who maintained the same opinion of themselves almost in our days.

Physicians (many at least that make profession thereof) besides divers less discoverable ways of fraud, have made them believe there is the book of fate, or the power of Aaron's breast-plate,[3] in urines. And, therefore, hereunto they have recourse, as unto the oracle of life, the great determinator of virginity, conception, fertility, and the inscrutable infirmities of the whole body. For, as though there were a seminality in urine,[4] or that, like the seed, it carried with it the idea of every part, they foolishly conceive, we visibly behold therein the anatomy of every particle, and can thereby indigitate their diseases: and, running into any demands, expect from us a sudden resolution in things, whereon the Devil of Delphos[5] would demur: and we know hath taken respite of some days to answer easier questions.

himself was killed, and his head brought to Jerusalem. *Acts* v. *Eusebius*, lib. ii, cap. x. *Dict. de Moréri, edit. par Drouet, sub. nom.*—*Br.*

[1] *many of the Jews, &c.*] "Taceo de Judaismi hæreticis . . . . . quod Herodiani Herodem regem suscepere pro Christo." *Hieoronymus, adv. Luciferianos*, cap. 8.—*J. K.*

[2] *David George, of Leyden.*] Or, as some say, of Ghent, was a glazier or a painter on glass, who began to preach, about the year 1525, that he was the true Messiah, the third David, and (like the well-known enthusiast of our own times, Richard Brothers) *the nephew of God*, not according to the flesh, but according to the spirit. He appears to have been an enthusiast of the worst order, uniting with this profession of being the Messiah, the teaching of many sentiments inimical alike to Christianity and to morals. However, he gained followers, and sustained the delusion even to his last hour. He died at Basle in 1556, having declared to his disciples, a short time previous to his death, that he should rise again on the third day after his decease. In order to expose the delusion, and confound the believers in his mad professions, the Senate of Basle had his body disinterred on the third day, and caused it to be burnt, together with his writings. *Dict. de Moréri, edit. par Drouet, sub nom.* and other authorities. —*Br.*

[3] *power of Aaron's breastplate.*] Josephus and others maintain that the precious stones of Aaron's breastplate were the *Urim* and *Thummim*, and that they discovered the will of God by their extraordinary lustre, thereby predicting the issue of events to those who consulted them.

[4] *For as though there were a seminality in urine.*] See *Primrose's Vulgar Errors, translated by Wittie*, p. 64. —*J. Cr.*

[5] *the Devil of Delphos.*] Meaning, the oracle of Apollo, at Delphos.

Saltimbancoes,[6] quacksalvers,[7] and charlatans, deceive them in lower degrees. Were Æsop alive, the Piazza and Pont-Neuf* could not but speak their fallacies.[8] Meanwhile there are too many whose cries cannot conceal their mischiefs: for their impostures are full of cruelty, and worse than any other; deluding not only unto pecuniary defraudations, but the irreparable deceit of death.

Astrologers, which pretend to be of Cabala with the stars[9] (such I mean as abuse that worthy enquiry) have not been wanting in their deceptions: who, having won their belief unto principles, whereof they make great doubt themselves, have made them believe, that arbitrary events below, have necessary causes above. Whereupon their credulities assent unto any prognosticks, and daily swallow the predictions of men; which, considering the independency of their causes, and contingency in their events, are only in the prescience of God.

Fortune-tellers, jugglers, geomancers,[1] and the like incantatory impostors, though commonly men of inferior rank, and from whom, without illumination, they can expect no more than from themselves, do daily and professedly delude them. Unto whom (what is deplorable in men and Christians) too many applying themselves, betwixt jest and earnest, betray the cause of truth, and insensibly make up the legionary body of error.

Statists and politicians, unto whom *ragione di stato* is the first considerable,[2] as though it were their business to deceive the people, as a maxim do hold, that truth is to be concealed

* Places in Venice and Paris, where mountebanks play their pranks.

[6] *Saltimbancoes.*] Mountebanks: *saltare in banco.*

[7] *quacksalvers.*] Originally those who made, sold, or applied ointments or oils; *salve-quacks.* Applied to travelling quacks or *charlatans.*

[8] *Were Æsop alive, the Piazza and Pont Neuf, &c.*] Alluding probably to Æsop's Fable of the "Astrologer and Traveller," and meaning to intimate that the *Piazza* and *Pont Neuf* would have suggested to the fabulist abundant materials for fresh apologues.

[9] *of* Cabala *with the stars.*] "Possessed of the key to their secrets." *Cabbala*, a Hebrew word signifying *tradition;* applied originally to the secret science of the rabbinical doctors, and thence used to designate any secret science.

[1] *geomancers.*] A geomancer is a caster of figures: a cheat, who pretends to foretell futurity by other means than the astrologer.—*Johnson.*

[2] *unto whom* ragione di stato, *&c.*] To whom *reasons of state* are of the first consideration.

from them; unto whom although they reveal the visible design, yet do they commonly conceal the capital intention. And therefore have they[3] ever been the instruments of great designs, yet seldom understood the true intention of any; accomplishing the drifts of wiser heads, as inanimate and ignorant agents the general design of the world, who, though in some latitude of sense, and in a natural cognition [they] perform their proper actions, yet do they unknowingly concur unto higher ends, and blindly advance the great intention of nature. Now how far they may be kept in ignorance, a great example there is in the people of Rome, who never knew the true and proper name of their own city. For, beside that common appellation received by the citizens, it had a proper and secret name concealed from them; *cujus alterum nomen*[4] *dicere secretis ceremoniarum nefas habetur*, saith Pliny. Lest the name thereof being discovered unto their enemies, their *penates* and patronal god might be called forth by charms and incantations. For, according unto the tradition of magicians, the tutelary spirits will not remove at common appellations, but at the proper names of things whereunto they are protectors.

Thus, having been deceived by themselves, and continually deluded by others, they must needs be stuffed with errors, and even overrun with these inferior falsities. Whereunto whosoever shall resign their reasons, either from the root of deceit in themselves, or inability to resist such trivial deceptions[5] from others, although their condition and fortunes may place them many spheres above the multitude, yet are they still within the line of vulgarity, and democratical enemies of truth.

[3] *have they.*] The vulgar have.—*Wr.*

[4] *secret name concealed from them, &c.*] This name was *Valentia*, for revealing which Soranus was put to deathe.—*Wr.*

[5] *deceptions.*] The first five editions read *ingannations.*

CHAPTER IV.

Of the more immediate Causes of Common Errors, both in the wiser and common sort; and first, of Misapprehension and Fallacy, or false Deduction.

THE first is a mistake, or a misconception of things, either in their first apprehension, or secondary relations. So Eve mistook the commandment, either from the immediate injunction of God, or from the secondary narration of her husband. So might the disciples mistake our Saviour, in his answer unto Peter concerning the death of John, as is delivered John xxi. "Peter seeing John, saith unto Jesus, Lord, and what shall this man do? Jesus saith, If I will, that he tarry till I come, what is that unto thee? Then went this saying abroad among the brethren, that that disciple should not die." Thus began the conceit and opinion of the Centaurs; that is, in the mistake of the first beholders, as is declared by Servius.[6] When some young Thessalians on horseback were beheld afar off, while their horses watered, that is, while their heads were depressed, they were conceived by the first spectators to be but one animal; and answerable hereunto have their pictures been drawn ever since.

And, as simple mistakes commonly beget fallacies; so men rest not in false apprehensions, without absurd and inconsequent deductions; from fallacious foundations, and misapprehended mediums, erecting conclusions no way inferrible from their premises. Now the fallacies whereby men deceive others, and are deceived themselves, the ancients have divided

[6] *In the mistake, &c.*] A mistake similar to that which is recorded by Herrera, the Spanish historian of America, to have been committed by the people of New Spain, when they first beheld the Spanish cavalry. They imagined the horse and his rider to be some monstrous animal of a terrible form, and supposing that their food was the same as that of men, brought flesh and bread to nourish them. No representation, however, of horsemen occurs, which might indicate that the artist regarded the horse and his rider as one animal, among the various specimens of Mexican *picture-writing*, which have been published by Purchas, Thevenot, Robertson, Humboldt, and others.—*Br.*

Ross says, "there is no doubt then but Centaurs, as well as other monsters, are produced, partly by the influence of the stars, and partly by other causes, &c."

into verbal and real. Of the verbal, and such as conclude from mistakes of the word, although there be no less than six, yet are there but two thereof worthy our notation, and unto which the rest may be referred; that is, the fallacy of equivocation and amphibology, which conclude from the ambiguity of some one word, or the ambiguous syntaxis of many put together. From this fallacy arose that calamitous error of the Jews, misapprehending the prophecies of their Messias, and expounding them always unto literal and temporal expectations. By this way many errors crept in, and perverted the doctrine of Pythagoras, whilst men received his precepts in a different sense from his intention; converting metaphors into proprieties,[7] and receiving as literal expressions obscure and involved truths. Thus when he enjoined his disciples an abstinence from beans, many conceived they were with severity debarred the use of that pulse, which, notwithstanding, could not be his meaning; for as Aristoxenus, who wrote his life, averreth, he delighted much in that kind of food himself. But herein, as Plutarch observeth, he had no other intention than to dissuade men from magistracy, or undertaking the publick offices of state: for by beans was the magistrate elected in some parts of Greece; and after his days, we read, in Thucydides, of the Council of the Bean in Athens. The same word also in Greek doth signify a testicle, and hath been thought by some, an injunction only of continency, as Aulus Gellius hath expounded, and as Empedocles may also be interpreted,* that is, *testiculis miseri dextras subducite.* And [this] might be the original intention of Pythagoras, as having a notable hint hereof in beans,[8] from the natural signature of the venereal organs of both sexes. Again, his injunction is, not to harbour swallows in our houses; whose advice notwithstanding we do not contemn, who daily admit and cherish them. For herein a caution is only implied, not to entertain ungrateful and thankless persons, which like the swallow, are

* πᾶν δεῖλοι κυαμῶν ἀπὸ χεῖρας ἔχεσθε.

[7] *converting metaphors into* proprieties.] "Taking an expression or representation which only by *simile* applies to a subject, as if it had properly (or of *propriety*) belonged to it." *Proprieties* here implies *literalities.*

[8] *as having, &c.*] See a curious paper on the ancient superstitions concerning beans and peas, in the *Working Bee*, iii, p. 11.—*J.*

no way commodious unto us, but having made use of our habitations, and served their own turns, forsake us. So he commands to deface the print of a cauldron in the ashes, after it hath boiled; which strictly to observe, were condemnable superstition. But hereby he covertly adviseth us not to persevere in anger, but after our choler hath boiled, to retain no impression thereof. In the like sense are to be received, when he adviseth his disciples to give the right hand but to few, to put no viands in a chamber-pot, not to pass over a balance, not to take up fire with a sword, or piss against the sun. Which ænigmatical deliveries comprehend useful verities, but being mistaken by literal expositors at the first, they have been misunderstood by most since, and may be occasion of error to verbal capacities for ever.

This fallacy is the first delusion Satan put upon Eve, and his whole tentation might be the same continued.[9] So when he said, "Ye shall not die," that was, in his equivocation, "ye shall not incur a present death," or a destruction immediately ensuing your transgression; "Your eyes shall be opened," that is, not to the enlargement of your knowledge, but discovery of your shame and proper confusion; "Ye shall know good and evil," that is, ye shall have knowledge of good by its privation, but cognizance of evil by sense and visible experience. And the same fallacy or way of deceit, so well succeeding in Paradise, he continued in his oracles through all the world. Which had not men more warily understood, they might have performed many acts inconsistent with his intention. Brutus might have made haste with Tarquine to have kissed his own mother.[1] The Athenians might have built them wooden walls,[2] or doubled the altar at Delphos.[3]

[9] *the same continued.*] The early editions read, "the same *clench* continued." Dean Wren remarks that *clench* is wrongly used here; meaning rather the detection of a sophistry than the sophistry itself. The author seems himself to have seen the error, and omitted the word.

[1] *Brutus might have made haste, &c.*] Alluding to his interpretation of the Delphian reply to the Tarquinii; "Young men, whichever of you shall first kiss your mother, he shall possess the sovereign power at Rome." Brutus, who was present, fell to the ground, as if accidentally, and touched with his lips his mother, *earth.*

[2] *The Athenians, &c.*] When the oracle advised them, on the approach of Xerxes, to take refuge within *their wooden walls*, which, by the advice of Themistocles, they understood to mean *their fleet.*

[3] *or doubled the altar at Delphos.*] This refers to the demand of the *Delian* oracle, "to double his cubical altar,"

The circle of this fallacy is very large; and herein may be comprised all ironical mistakes, for intended expressions receiving inverted significations; all deductions from metaphors, parables, allegories, unto real and rigid interpretations. Whereby have risen, not only popular errors in philosophy, but vulgar and senseless heresies in divinity; as will be evident unto any that shall examine their foundations, as they stand related by Epiphanius,[4] Austin, or Prateolus.[5]

Other ways there are of deceit; which consist not in false apprehension of words, that is, verbal expressions, or sentential significations, but fraudulent deductions, or inconsequent illations, from a false conception of things. Of these extradictionary[6] and real fallacies, Aristotle and logicians make in number six, but we observe that men are most commonly deceived by four thereof: those are, *petitio principii; a dicto secundum quid ad dictum simpliciter; a non causa pro causa;* and, *fallacia consequentis.*

The first is, *petitio principii.* Which fallacy is committed, when a question is made a medium, or we assume a medium as granted, whereof we remain as unsatisfied as of the question. Briefly, where that is assumed as a principle to prove another thing, which is not conceded as true itself.[7] By this fallacy was Eve deceived, when she took for granted, the false assertion of the Devil: "Ye shall not surely die; for God doth know, that in the day ye shall eat thereof, your eyes shall be opened, and you shall be as Gods." Which was but a bare affirmation of Satan, without any proof or probable inducement, contrary unto the command of God, and

which gave occasion to a long series of geometrical inventions. See *Gillies Anc. Greece*, part 2, vol. ii, p. 130, and the authorities he refers to.

[4] *Epiphanius, &c.*] Epiphanius, *contra octoginta Hæreses Panarium*; Augustinus, *De Hæresibus.*

[5] *Gabriel Pratcolus.*] Vernacularly *du Preau*, was a voluminous French ecclesiastical writer of the 16th century. He was distinguished by the ardour of his zeal for the Roman catholic church, in opposition to those whom she has been pleased to stigmatize by the name of heretics. This spirit is manifested in all his works, but that to which Browne refers is doubtless the following: "De vitis, lectis, et dogmatibus, omnium hæreticorum, qui ab orbe condito, ad nostra usque tempora, et veterum et recentium monumentis proditi sunt, elenchus alphabeticus," &c.—*Br.*

[6] *extradictionary.*] Johnson, citing the present passage, explains the word, "not relating to words, but realities."

[7] *where that is assumed as a principle, &c.*] More clearly, "where that which is not conceded as true itself, is assumed as a principle to prove another thing."

former belief of herself. And this was the logick of the Jews when they accused our Saviour unto Pilate; who demanding a reasonable impeachment, or the allegation of some crime worthy of condemnation, they only replied, "If he had not been worthy of death, we would not have brought him before thee." Wherein there was neither accusation of the person nor satisfaction of the judge, who well understood a bare accusation was no presumption of guilt, and the clamours of the people no accusation at all. The same fallacy is sometimes used in the dispute between Job and his friends, they often taking that for granted which afterwards he disproveth.

The second is, *A dicto secundum quid ad dictum simpliciter*, when from that which is but true in a qualified sense, an inconditional and absolute verity is inferred; transferring the special consideration of things unto their general acceptions, or concluding from their strict acception unto that without all limitation. This fallacy men commit when they argue from a particular to a general; as when we conclude the vices or qualities of a few, upon a whole nation, or from a part unto the whole. Thus the Devil argued with our Saviour; and by this he would persuade him he might be secure if he cast himself from the pinnacle: "For," said he, "it is written, He shall give his angels charge concerning thee, and in their hands they shall bear thee up, lest at any time thou dash thy foot against a stone." But this illation was fallacious, leaving out part of the text, (Psalm 91,) "He shall keep thee in all thy ways;" that is, in the ways of righteousness, and not of rash attempts: so he urged a part for the whole, and inferred more in the conclusion than was contained in the premises. By the same fallacy we proceed, when we conclude from the sign unto the thing signified. By this encroachment idolatry first crept in, men converting the symbolical use of idols into their proper worship, and receiving the representation of things as the substance and thing itself.[8] So the statue of Belus, at first erected in his memory, was in aftertimes adored

[8] *By this incroachment, &c*] The conversion of the "symbolical use" of such "idols" as consisted of natural objects or their representations "into their proper worship," is beautifully though consisely explained in Kirby and Spence's *Introduction to Entomology*, vol. iv, p. 401-403.—*Br.*

as a divinity. And so also in the sacrament of the Eucharist, the bread and wine which were but the signals or visible signs, were made the things signified, and worshipped as the body of Christ. And hereby generally men are deceived, that take things spoken in some latitude without any at all. Hereby the Jews were deceived concerning the commandment of the sabbath, accusing our Saviour for healing the sick, and his disciples for plucking the ears of corn upon that day. And, by this deplorable mistake, they were deceived unto destruction, upon the assault of Pompey the Great, made upon that day;[9] by whose superstitious observation they could not defend themselves, or perform any labour whatever.

The third is, *A non causa pro causa*, when that is pretended for a cause which is not, or not in that sense which is inferred. Upon this consequence the law of Mahomet forbids the use of wine;[1] and his successors abolished universities. By this, also, many Christians have condemned literature, misunderstanding the counsel of Saint Paul, who adviseth no further than to beware of philosophy.[2] On this foundation were built the conclusions of soothsayers in their augurial and tripudiary divinations, collecting presages from voice or food of birds, and conjoining events unto causes of no connection. Hereupon also are grounded the gross mistakes in the cure of many diseases, not only from the last medicine and sympathetical receipts, but amulets, charms, and all incantatory applications; deriving effects not only from inconcurring causes, but things devoid of all efficiency whatever.

[9] *And by this deplorable mistake, &c.*] The reader will find the particulars of this event recorded by Josephus, in his *Antiquities of the Jews*, book xiv, chap. 4, to which some pertinent illustrations from other parts of the Jewish history have been added by Whiston.—*Br.*

[1] *Upon this consequence, &c.*] Meaning probably that Mahomet forbad the *use* of wine, when his motive was to prevent its *abuse* only; but his experience had taught him that the only means of effecting this would be to prohibit it altogether.

[2] *Philosophy.*] The apostle bids beware of vaine philosophie: where the worde (vaine) is a sufficient commentarye to a Christian, that by forbidding that which is indeed vaine, he advanceth true philosophye: such as is that of the hexameron, or 6 dayes creation: whereon many of the ancient Christians have left admirable treatises, setting forth in those workes the incomprehensible wisdom, and majesty and omnipotency of the Creator, and his unpromerited inexhausted goodness unto us, for whom he ordained the use of them all: that by our acknowledgment, the abundant grace might redound to his glorye; as itt hath don in all ages by that divine philosophical treatise of Moses philosophie, mentioned in the 196th page, line 7, in the passage beginning "And though Galen," &c.—*Wr.*

The fourth is, the fallacy of the consequent; which, if strictly taken, may be a fallacious illation in reference unto antecedency, or consequency; as, to conclude, from the position of the antecedent, to the position of the consequent, or from the remotion of the consequent, to the remotion of the antecedent. This is usually committed when in connexed propositions the terms adhere contingently. This is frequent in oratory illations; and thus the Pharisees, because he conversed with publicans and sinners, accused the holiness of Christ. But, if this fallacy be largely taken, it is committed in any vicious illation, offending the rules of good consequence; and so it may be very large, and comprehend all false illations against the settled laws of logick. But the most usual inconsequencies are from particulars, from negatives, and from affirmative conclusions in the second figure, wherein, indeed, offences are most frequent, and their discoveries not difficult.

CHAPTER V.

Of other more immediate Causes of Error;—viz. Credulity and Supinity.

A THIRD cause of common errors[3] is, the credulity of men, that is, an easy assent to what is obtruded, or a believing, at first ear, what is delivered by others. This is a weakness in the understanding, without examination assenting unto things which, from their natures and causes, do carry no persuasion; whereby men often swallow falsities for truths, dubiosities for certainties, feasibilities for possibilities, and things impossible as possibilities themselves. Which, though a weakness of the intellect, and most discoverable in vulgar heads, yet hath it sometime fallen upon wiser brains, and great advancers of truth. Thus many wise Athenians so far forgot their philosophy, and the nature of human production, that they descend-

[3] *A third cause of common errors.*] *apprehension*; the second, *fallacious*, or The first cause being *mistake*, or mis- *false inferences.*

ed unto belief that the original of their nation was from the earth, and had no other beginning, than from the seminality and womb of their great mother. Thus it is not without wonder how those learned Arabicks, so tamely delivered up their belief unto the absurdities of the Alcoran. How the noble Geber, Avicenna, and Almanzor, should rest satisfied in the nature and causes of earthquakes, delivered from the doctrine of their prophet; that is, from the motion of a great bull, upon whose horns all the earth is poised.[4] How their faiths could decline so low as to concede their generations in heaven to be made by the smell of a citron, or that the felicity of their paradise should consist in a jubilee of conjunction, that is, a coition of one act prolonged unto fifty years.[5] Thus is it almost beyond wonder, how the belief of reasonable creatures should ever submit unto idolatry; and the credulity of those men scarce credible (without presumption of a second fall) who could believe a Deity in the work of their own hands. For although in that ancient and diffused adoration of idols unto the priests and subtiler heads, the worship, perhaps, might be symbolical, and as those images some way related

[4] *How the noble Geber, &c.*] Sale's Koran having been in vain examined for some justification of this passage, I requested my learned friend, Mr. W. H. Black, to refer to the works of Geber, Almanzor, and Avicenna, in the library of the British Museum. He did so, without success, as appears from the following extracts from his obliging reply:—

"I have diligently perused (but in vain) the *Rhasis of Almanzor* (1497, folio), and *Taragua's Alphabetical Arrangement or Common Place Book of Avicenna* (Burdigal, 4to. 1520), and two editions of Geber, the latter being, as I think, the same book as you mean. . . . . .

"This little duodecimo volume contains several curious tracts not named in the title, all which I have also perused, and the only notice of *earthquakes* I can any where find, is in "*Avicennæ Mineralia*," p. 248, in the beginning of the 2nd chapter. "De Causa Montium."

"Montes quoque quandoque fiunt ex causa essentiali, quandoque ex causa accidentali. Ex essentiali causa, ut ex *vehementi motu terræ* elevatur terra et fit mons."

[5] *How their faiths, &c.*] It will be sufficient merely to remark, that the ridiculous conceits respecting "generations in heaven" and the "felicity of Paradise," here attributed to Mohammed, are not to be found in the Korân, or in any genuine commentary upon it. They have much the air of Rabbinical fancies, foisted upon the Mohammedans by their inventors. At the same time, the real dogmas of the prophet of Mecca upon both points, afford, perhaps, as good an illustration of the credulity of the Arabian philosophers as those erroneously ascribed to him in the text. For "according to the saying of the prophet," if any of the faithful in Paradise be desirous of issue, it shall be *conceived* by their Houri wives, *born*, and *grown up*, *within the space of an hour*. And the other extraordinary notion alluded to by Browne, (for doubtless he was not the originator of it) may have been derived from the declaration of Mohammed, that in order to qualify the blessed for the full enjoyment of the pleasures and delights of Paradise, which they would otherwise sink under, "God will give to every one the abilities of an hundred men." Vide *Sale's Korân, Prelim. Disc.* sec. iv.—*Br.*

unto their deities; yet was the idolatry direct and downright in the people; whose credulity is illimitable, who may be made believe that any thing is God; and may be made believe there is no God at all.

And, as credulity is the cause of error, so incredulity oftentimes of not enjoying truth: and that not only an obstinate incredulity, whereby we will not acknowledge assent unto what is reasonably inferred, but any academical reservation in matters of easy truth, or rather sceptical infidelity against the evidence of reason and sense. For these are conceptions befalling wise men, as absurd as the apprehensions of fools, and the credulity of the people, which promiscuously swallow any thing. For this is not only derogatory unto the wisdom of God, who hath proposed the world unto our knowledge, and thereby the notion of himself, but also detractory unto the intellect and sense of man, expressedly disposed for that inquisition. And, therefore, *hoc tantum scio, quod nihil scio,* is not to be received in an absolute sense, but is comparatively expressed unto the number of things whereof our knowledge is ignorant. Nor will it acquit the insatisfaction of those who quarrel with all things, or dispute of matters concerning whose verities we have conviction from reason, or decision from the inerrable and requisite conditions of sense. And, therefore, if any affirm the earth doth move, and will not believe with us, it standeth still;[6] because he hath proba-

[6] *it standeth still.*] [In] the booke of God, from Moses unto Christ, there are no lesse than 80 and odd expresse places, affirming in plaine and overt termes the naturall and perpetuall motion of the sun and the moon; and that the stop or stay of that motion was one of the greatest miracles that ever the whole world beheld: others the rising and setting of them: others, their diurnal course and vigorous activitye upon this lowest world: others, their circulation on this world or earth not only daylye, but annually, by a declination from the mid-line on both sides, North and South: others (as expressly) the impossibility of any (other) motion in the earth, than that terrible and pænal motion of his shaking itt, that made it: others, that it cannot be moved totally in his place, nor removed universal out of his place. Soe that were itt nothing else than the veneration and firme beliefe of that Word of His, which the penmen thereof spake not of themselves, but by inspiration of the Holy Ghost, they that profess Christianitye should not dare, much lesse adventure to call the letter thereof in question concerning things soe plainly, frequently, constantly, delivered: should tremble at that curse which is denounced against those that adde any thing unto itt, or diminish any tittle of itt: should feare to raise such a hellish suspition in vulgar myndes, as the Romish church, by undervalewing the majesty and authority thereof, hath done; should bee affrighted to follow that audacious and pernicious suggestion, which Satan used, and thereby undid us all in our first parents; that God had a double meaning in his commands, in effect condemning God of am-

ble[7] reasons for it, and I no infallible sense, nor reason against it,[8] I will not quarrel with his assertion. But if, like Zeno, he shall walk about, and yet deny there is any motion in nature, surely that man was constituted for Anticyra,[9] and were a fit companion for those who, having a conceit they are dead, cannot be convicted into the society of the living.

The fourth is a supinity, or neglect of enquiry, even of matters whereof we doubt; rather believing than going to see, or doubting with ease and gratis than believing with dif-

phibologye. And all this boldness and overweaning having no other ground, but a seeming argument of some phænomena forsooth; which notwithstanding, we know the learned Tycho ὁ Ἀστρονομάτχων, who lived (52) years since Copernicus, hath by admirable and matchlesse instruments, and many yeares exact observations proved to bee noe better than a dreame.—*Wr.*

[7] *probable.*] Seeminge.—*Wr.*

[8] *reason against it.*] Other then God's perpetual dictate.—*Wr.*

[9] *Anticyra.*] Two cities of the same name, the one in Phocis, the other in Thessaly, famous for producing hellebore, which was esteemed among the ancients the great remedy for madness.

Hence the proverb mentioned by Horace, *Naviget Anticyram*, which was applied to a person deemed insane; and hence also the allusion in the text.

A remarkable illustration of Browne's remarks on obstinate and irrational scepticism is afforded by the history of *meteorites*, or of the bodies cast down upon the earth by meteors in the atmosphere. The fall of metallic and stony bodies from the atmosphere, is recorded by writers of every age of classical antiquity, many of whom narrated instances of it that had occurred in their own times, or even within their own knowledge. Evidence of the same kind is abundantly to be found throughout the middle and dark ages; and after the reformation, the fall of meteorites was witnessed and described by several natural philosophers of approved eminence and undoubted credit, during the sixteenth and seventeenth century, with the same attendant phænomena as had been described by the historians and writers of all the epochs we have mentioned. In the eighteenth century similar events took place, and were attested by irrefragable moral evidence. But the opinion, that nothing was to be believed which could not directly be accounted for, was now very prevalent. The accounts of the fall of meteoric stones were consequently rejected as impossible, and incompatible with the laws of nature; and specimens of stones and iron that had been seen to fall by hundreds of people, were preserved in cabinets of natural history, as ordinary minerals, "which the credulous and superstitious regarded as having fallen from the clouds." Towards the latter end of the eighteenth century, the attention of several candid men of science was attracted to the subject by some remarkable cases which then occurred: but so powerful was the inclination to negative the question, that accounts of the fall of three similar stones, in as many districts of country, attested in the most convincing manner, could not obtain credence in the minds of a committee of the French Academy of Sciences, one of whom was the celebrated Lavoisier. At length, however, all the powers of inductive research were exerted upon the subject, which was subjected, in 1801, by the late Mr. Edward Howard, F. R. S. to a train of exact research: stones stated to have fallen from meteors in various parts of the world were collected and examined, and shewn to bear a decided resemblance to each other, whilst they were altogether dissimilar from every known mineral. In England, this evidence gradually vanquished incredulity, but many foreign *savans* refused to believe it, and the bulk of the French philosophers were yet undecided what to think, when the fall of some thousands of stones at L'Aigle, in Normandy, the testimonies to which were scrutinized with judicial circumspection and jealousy, compelled the most determined scepticism to an unwilling assent.—*Br.*

ficulty or purchase. Whereby, either from a temperamental inactivity, we are unready to put in execution the suggestions or dictates of reason: or by a content and acquiescence in every species of truth, we embrace the shadow thereof, or so much as may palliate its just and substantial acquirements. Had our forefathers sat down in these resolutions, or had their curiosities been sedentary, who pursued the knowledge of things through all the corners of nature, the face of truth had been obscure unto us, whose lustre in some part their industries have revealed.

Certainly the sweat of their labours was not salt unto them, and they took delight in the dust of their endeavours. For, questionless, in knowledge there is no slender difficulty; and truth, which wise men say doth lie in a well, is not recoverable by exantlation.[1] It were some extenuation of the curse, if *in sudore vultûs tui* were confinable unto corporal exercitations, and there still remained a Paradise, or unthorny place of knowledge. But now, our understandings being eclipsed, as well as our tempers infirmed, we must betake ourselves to ways of reparation, and depend upon the illumination of our endeavours. For thus we may, in some measure, repair our primary ruins, and build ourselves men again. And though the attempts of some have been precipitous, and their enquiries so audacious as to come within command of the flaming swords, and lost themselves in attempts above humanity; yet have the enquiries of most defected by the way, and tired within the sober circumference of knowledge.

And this is the reason why some have transcribed any thing; and although they cannot but doubt thereof, yet neither make experiment by sense, nor enquiry by reason, but live in doubts of things, whose satisfaction is in their own power; which is, indeed, the inexcusable part of our ignorance, and may, perhaps, fill up the charge of the last day.[2] For, not obeying the dictates of reason, and neglecting the crys of truth, we fail, not only in the trust of our undertakings, but in the intention of man itself. Which, although more venial in ordinary constitutions, and such as are not

[1] *by exantlation.*] By *being drawn out.* See *Christian Morals*, p. ii, § 5.

[2] *may, perhaps, fill up the charge, &c.*] Audi et time!—*Ilr.*

framed beyond the capacity of beaten notions; yet will it inexcusably condemn some men, who, having received excellent endowments, have yet sat down by the way, and frustrated the intention of their abilities. For certainly, as some men have sinned in the principles of humanity, and must answer for not being men; so others offend if they be not more. *Magis extra vitia, quàm cum virtutibus*, would commend those: these are not excusable without an excellency. For, great constitutions, and such as are constellated unto knowledge, do nothing till they out-do all; they come short of themselves, if they go not beyond others; and must not sit down under the degree of worthies. God expects no lustre from the minor stars; but if the sun should not illuminate all, it were a sin in nature. *Ultimus bonorum*, will not excuse every man, nor is it sufficient for all to hold the common level. Men's names should not only distinguish them. A man should be something, that all men are not, and individual in somewhat beside his proper name.[3] Thus, while it exceeds not the bounds of reason and modesty, we cannot condemn singularity. *Nos numerus sumus*, is the motto of the multitude, and for that reason are they fools. For things, as they recede from unity, the more they approach to imperfection and deformity; for they hold their perfection in their simplicities, and as they nearest approach unto God.

Now, as there are many great wits to be condemned, who have neglected the increment of arts, and the sedulous pursuit of knowledge; so are there not a few very much to be pitied, whose industry being not attended with natural parts, they have sweat to little purpose, and rolled the stone in vain. Which chiefly proceedeth from natural incapacity, and genial indisposition, at least, to those particulars whereunto they apply their endeavours. And this is one reason why, though universities be full of men, they are oftentimes empty of learning; why, as there are some men do much without learning,[4] so others but little with it, and few that attain to any measure of it. For many heads, that undertake it, were never

[3] *A man should be, &c.*] A right and able man should.—*Wr.*

[4] *why, as there are some men, &c.*] These observations are well amplified by the author in his *Christian Morals*, p. ii, § 1.—*J. Cr.*

squared, nor timber'd for it. There are not only particular men, but whole nations indisposed[5] for learning; whereunto is required, not only education, but a pregnant Minerva, and teeming constitution. For the wisdom of God hath divided the genius of men according to the different affairs of the world, and varied their inclinations according to the variety of actions to be performed therein. Which they who consider not, rudely rushing upon professions and ways of life unequal to their natures, dishonour not only themselves and their functions, but pervert the harmony of the whole world. For, if the world went on as God hath ordained it, and were every one employed in points concordant to their natures, professions, arts, and commonwealths, would rise up of themselves, nor needed we a lanthorn to find a man in Athens.

CHAPTER VI.

Of another more immediate Cause of Error;—viz. obstinate Adherence unto Antiquity.

But the mortallest enemy unto knowledge, and that which hath done the greatest execution upon truth, hath been a peremptory adhesion unto authority; and more especially, the establishing of our belief upon the dictates of antiquity. For (as every capacity may observe) most men, of ages present, so superstitiously do look upon ages past, that the authorities of the one exceed the reasons of the other. Whose persons indeed being far removed from our times, their works, which seldom with us pass uncontrolled, either by contemporaries, or immediate successors, are now become out of the distance of envies; and, the farther removed from present times, are conceived to approach the nearer unto truth itself. Now hereby methinks we manifestly delude ourselves, and widely walk out of the track of truth.

[5] *whole nations, &c.*] Surely so sweeping an assertion as this would fall under the author's own censure, in Religio Medici, p. 93.

For, first, men hereby impose a thraldom on their times, which the ingenuity of no age should endure, or indeed the presumption of any did ever yet enjoin. Thus Hippocrates about two thousand years ago, conceived it no injustice, either to examine or refute the doctrines of his predecessors; Galen the like, and Aristotle the most of any. Yet did not any of these conceive themselves infallible, or set down their dictates as verities irrefragable: but when they either deliver their own inventions, or reject other men's opinions, they proceed with judgment and ingenuity; establishing their assertions, not only with great solidity, but submitting them also unto the correction of future discovery.

Secondly, Men that adore times past consider not that those times were once present, that is, as our own are at this instant; and we ourselves unto those to come, as they unto us at present: as we rely on them, even so will those on us, and magnify us hereafter, who at present condemn ourselves. Which very absurdity is daily committed amongst us, even in the esteem and censure of our own times. And, to speak impartially, old men, from whom we should expect the greatest example of wisdom, do most exceed in this point of folly; commending the days of their youth, which they scarce remember, at least well understood not, extolling those times their younger years have heard their fathers condemn, and condemning those times the gray heads of their posterity shall commend. And thus is it the humour of many heads, to extol the days of their forefathers, and declaim against the wickedness of times present. Which notwithstanding they cannot handsomely do, without the borrowed help and satires of times past; condemning the vices of their own times, by the expressions of vices in times which they commend, which cannot but argue the community of vice in both. Horace, therefore, Juvenal, and Persius, were no prophets, although their lines did seem to indigitate and point at our times. There is a certain list of vices[6] committed in all ages, and declaimed against by all authors, which will last as long as human nature; which digested into common places, may

[6] *There is a certain list of vices.*] semper retinentur," saith old Livius. "Qualia sunt quæ semper velantur sed —*Wr.*

serve for any theme, and never be out of date until doomsday.

Thirdly, The testimonies of antiquity, and such as pass oraculously amongst us, were not, if we consider them, always so exact as to examine the doctrine they delivered. For some, and those the acutest of them, have left unto us many things of falsity; controllable, not only by critical and collective reason, but common and country observation.

Hereof there want not many examples in Aristotle, through all his book of animals; we shall instance only in three of his problems, and all contained under one section. The first enquireth, why a man doth cough, but not an ox or cow; whereas notwithstanding the contrary is often observed by husbandmen, and stands confirmed by those who have expressly treated *De re rustica*, and have also delivered divers remedies for it. Why juments, as horses, oxen, and asses, have no eructation or belching; whereas indeed the contrary is often observed, and also delivered by Columella. And thirdly, why man alone hath grey hairs; whereas it cannot escape the eyes, and ordinary observation of all men, that horses, dogs, and foxes, wax gray with age in our countrys;[7] and in the colder regions, many other animals without it. And though favourable constructions may somewhat extenuate the rigour of these concessions[8] yet will scarce any palliate that in the fourth of his meteors, that salt is easiest dissolvable in cold water;[9] nor that of Dioscorides, that quicksilver is best preserved in vessels of tin and lead.

[7] *Why man alone hath grey hairs, &c.*] The author's previous reference to the problems of Aristotle, of which this is one, is so ambiguous, that it might induce a reader, unacquainted with the works of the Stagirite, to suppose that the problems formed part of the "Book of Animals," which is not the case. From a passage in the latter work, however, apparently unknown to our author, it is to be inferred that Aristotle was aware of the fact, that other animals become grey by age, and that he is speaking not in an absolute but in a comparative sense, when he asks the above question in the problems. For in the *History of Animals*, ib. iii, cap. xi., speaking of animals in general, he observes that "the colour of the hair changes in old age, in men becoming white, undergoing the same change in other animals, but not very manifestly, except in the horse," which latter is one of the instances cited in the paragraph before us, in contradiction of Aristotle. The other subjects, coughing and eructation, are not noticed in the *History of Animals.—Br.*

[8] *And though favourable constructions, &c.*] Added in second edition.

[9] *That salt is easiest dissolvable in cold water.*] Upon examining the entire chapter (vi) of the Meteors here cited, I found that our author had altogether mistaken the meaning of the passage re-

Other authors write often dubiously, even in matters wherein is expected a strict and definitive truth, extenuating their affirmations with *aiunt, ferunt, fortasse;*[5] as Dioscorides, Galen, Aristotle, and many more. Others by hearsay, taking upon trust most they have delivered; whose volumes are mere collections, drawn from the mouths or leaves of other authors, as may be observed in Pliny, Ælian, Athenæus, and many more. Not a few transcriptively, subscribing their names unto other mens endeavours, and merely transcribing almost all they have written. The Arabs transcribing the Greeks, the Greeks and Latins each other.

Thus hath Justine[6] borrowed all from Trogus Pompeius, and Julius Solinus in a manner transcribed Pliny. Thus have Lucian and Apuleius served Lucius Pratensis; men both living in the same time, and both transcribing the same author, in those famous books, entituled Lucius by the one, and Aureus Asinus by the other. In the same measure hath Simocrates, in his tract De Nilo, dealt with Diodorus Siculus, as may be observed in that work annexed unto Herodotus, and translated by Jungermannus. Thus Eratosthenes wholly translated Timotheus de Insulis, not reserving the very preface. The same doth Strabo report of Eudorus, and Arstion, in a treatise entituled De Milo. Clemens Alexandrinus hath

lating to the solubility of salts. Aristotle does not use the term "cold moisture" (for this is the sense of the original, not *cold water*, as Browne has rendered it) in contradiction to *hot moisture*, he does not intend to say, as our author infers, that nitre and salts are more readily soluble in cold water than in hot; but he uses the phrase "cold moisture" as the opposite to "dry heat." Not far from the beginning of the chapter, he had previously defined water to be "a cold moisture;" and in the passage in question he says that salts and nitre (the *νίτρον* of the Greeks, which was not our nitre, or saltpetre, but the *natron* of North Africa, one of the *carbonates of soda* of modern chemistry) are soluble in moisture, using that term to denote humid substances in general, yet not in all moisture, "but in that which is cold." He adds, immediately, which proves this view of the subject to be the true one, "hence they are liquefied by water, and by aqueous fluids in general; (*ὕδατος εἴδη*:) but they are not liquefied by oil;" evidently regarding the latter fluid as not being "a cold moisture." It may be remarked also, as an indication of the degree of acquaintance with such subjects possessed by our author, and by the generality of physical inquirers in his time, that he would, to a considerable extent, be himself in error, even had the assertion of Aristotle really been as he represents it; for common salt and several others are actually "easiest dissolvable in cold water."—*Br.*

[5] *aiunt, ferunt, fortasse.*] These three terms, and such like, argue so much modesty in those magazines of all human [learning?] as might well free them from a censure.—*Wr.*

[6] *Justine.*] He cannot be properly said to borrow who professes only an epitome. —*Wr.*

observed many examples hereof among the Greeks; and Pliny speaketh very plainly in his preface, that conferring his authors, and comparing their works together, he generally found those that went before *verbatim* transcribed by those that followed after, and their originals never so much as mentioned. To omit how much the wittiest* piece of Ovid is beholden unto Parthenius Chius; even the magnified Virgil hath borrowed almost all his works; his Eclogues from Theocritus, his Georgicks from Hesiod and Aratus, his Æneids from Homer, the second book whereof containing the exploit of Sinon and the Trojan Horse (as Macrobius observeth) he hath *verbatim* derived from Pisander. Our own profession is not excusable herein. Thus Oribasius, Ætiuus, and Æginета, have in a manner transcribed Galen. But Marcellus Empericus, who hath left a famous work De Medicamentis, hath word for word transcribed all Scribonius Largus, De Compositione Medicamentorum, and not left out his very peroration. Thus may we perceive the ancients were but men, even like ourselves. The practice of transcription in our days was no monster in theirs. Plagiary had not its nativity with printing, but began in times when thefts were difficult, and the paucity of books scarce wanted that invention.

Nor did they only make large use of other authors, but often without mention of their names. Aristotle, who seems to have borrowed many things from Hippocrates, in the most favourable construction, makes mention but once of him,† and that by the bye, and without reference unto his present doctrine. Virgil, so much beholding unto Homer,[3] hath not his name in all his works; and Pliny, who seems to borrow many authors out of Dioscorides, hath taken no notice of him. I wish men were not still content to plume themselves with others feathers. Fear of discovery, not single ingenuity,[4] affords quotations rather than transcriptions; wherein, notwithstanding, the plagiarism of many makes little considera-

* His Metamorphoses.

† In his Politicks.

[3] *beholding unto Homer.*] "Very corruptly written," says Johnson, "for *beholden, held in obligation*, from the Dutch *gehouden*." But Sir Thomas probably uses the word in the sense of "*looking* unto Homer," as to an authority or a source of information.

[4] *single ingenuity.*] "Simple ingenuousness."

tion,[5] whereof, though great authors may complain, small ones cannot but take notice.[6]

Fourthly, While we so eagerly adhere unto antiquity, and the accounts of elder times, we are to consider the fabulous condition thereof. And that we shall not deny, if we call to mind the mendacity of Greece, from whom wee have received most relations; and that a considerable part of ancient times was by the Greeks themselves termed μύθικον, that is, made up, or stuffed out with fables.[7] And surely the fabulous

[5] *the plagiarism, &c.*] That is, "plagiarism against many authors, who are little known, often escapes detection."

[6] *Nor did they, &c.*] Added in sixth edition.

[7] *By the Greeks themselves termed μύθικον, that is, made up, or stuffed out with fables.*]—Our author seems here to misinterpret to a certain extent the term μύθικον, as applied to the earlier ages of Grecian history; and as his view of this point enters into the consideration of many other subjects discussed in the Pseudodoxia, it may be useful to the reader to offer in this place a few remarks upon what appears to be the true meaning of that term, as employed by the ancients themselves. The remains of Grecian, Egyptian, and Indian antiquity which have come down to us, and the modern investigations of the *mythi* of the ancients in general, abundantly evince that it was the custom with mankind, at periods of very remote antiquity, to couch whatever instructions or intellectual contemplations they wished to be conveyed to posterity, under the form of a *historical relation*, but intermingled with circumstances so extraordinary, as showed it was not designed to be literally apprehended. In process of time, however, the meaning of the symbols thus used was forgotten; and then the narratives composed by their aid, being accompanied in their descent to posterity by a feeling of respect which prevented their total rejection, began to be understood according to their literal meaning only, and mankind were lost in amazement at the marvellous things, which they supposed their ancestors to have witnessed. Thus the vulgar, in the latter ages of Greece and Rome, looked back with admiration at the times when their heroes went to school to the Centaurs, and when sacred statues or holy shields fell from heaven for the protection of favoured cities. And further: the people of the earliest ages of the world appear to have been of a turn of mind so devoted to exalted sentiments and, sublime contemplations, that they seem never to have thought of committing to writing accounts of common or historical occurrences: for which reason, as the researches of our own and the preceding age have amply proved, no authentic history of political or civil events, of any very great antiquity, exists, with the exception of the inspired books given through Moses.—Hence, and now we arrive at the true meaning of the term μυθικον—the well known remark of Varro: that the space of time before the flood was αδηλον—the period of utter obscurity; that the age from the flood to the first Olympiad was μυθικον—the period of *mythi*, or of *mystery*,—not the part of history made up of fables, in the common sense of the term, as our author supposes; and that it was only with the first Olympiad that commenced the period ιστορικον—that of literal or true history.—With this general view of the subject, (for which I must acknowledge myself indebted, substantially, to Lect. vi, of Noble's *Plenary Inspiration of the Scriptures,*) the results of the profound researches of M. Julius Klaproth into the history and philological antiquities of Asia, especially with respect to the comparative state and nature of history among the Hindûs and the Chinese, entirely concur. The sense here attributed to μυθικον may also in particular be confirmed from the results at which M. Klaproth has arrived; as used by Varro, it must of course have been

inclination of those days was greater than any since; which swarmed so with fables, and from such slender grounds took hints for fictions, poisoning the world ever after: wherein how far they succeeded may be exemplified from Palæphatus,* in his book of Fabulous Narrations. That fable of Orpheus, who by the melody of his musick made woods and trees to follow him, was raised upon a slender foundation; for there were a crew of mad women retired unto a mountain, from whence, being pacified by his musick, they descended with boughs in their hands; which, unto the fabulosity of those times, proved a sufficient ground to celebrate unto all posterity the magick of Orpheus's harp, and its power to attract the senseless trees about it.[8] That Medea, the famous sorceress, could renew youth, and make old men young again, was nothing else, but that from the knowledge of simples, she had a receipt to make white hair black, and reduce old heads into the tincture of youth again. The fable of Geryon and Cerberus with three heads was this: Geryon was of the city Tricarinia,[9] that is, of three heads, and Cerberus of the same

* An ancient author who writ Περὶ ἀπίστων, *sive de incredibilibus*, whereof some part is yet extant.

suggested by the consideration, principally, of Greek and early Roman history; but M. Klaproth, from the consideration, principally, of the ancient history of Asia, divides the history of ancient nations into *mythology*, doubtful history, and authentic history; the first of which he states to be "*truth in part*, enveloped in an impenetrable darkness of fable and *allegory*," and generally consisting (as M. Klaproth, perhaps somewhat too comprehensively, infers), "of subsequently calculated astronomical periods, metamorphosed into dynasties and heroes."

If the views submitted in this note be borne in mind, and much might be added in further confirmation of their truth, from the most recent and satisfactory investigations of the *mythi*, by the most sober-minded inquirers and critics, of all countries, and all schools of ancient literature, the reader will often be enabled to arrive at a more satisfactory solution of the marvellous relations of classical antiquity, than those adopted by our author. To what extent we may receive the explanations of them he has given from *Palæphatus* and others, may in some degree be inferred from the circumstances mentioned in our note upon the "fable of *Charon*," p. 221.—*Br.*

[8] *Orpheus' Harp, &c.*] Dr. Delany, in his life of David, produces some ingenious arguments to prove that Orpheus was in reality the same person with David.—*J.*

We are tempted to insert (rather for *ornament* than illustration) a *jeu d'esprit* of the late .... Lisle: See *Aikin's Vocal Poetry*, 8vo. 1810, p. 228:—

When Orpheus went down to the regions below,
Which men are forbidden to see,
He tuned up his lyre, as old histories show,
To set his Eurydice free.

All hell was astonish'd, a person so wise
Should rashly endanger his life,
And venture so far—but how vast their surprize,
When they found that he came for his wife!

To find out a punishment due for his fault,
Old Pluto long puzzled his brain:
But hell had not torments sufficient he thought,
—So he gave him his wife back again.

But pity succeeding soon vanquished his heart,
And, pleas'd with his playing so well,
He took her again, in reward of his art;—
Such power had music in hell!

[9] *Tricarinia.*] Read *Trinacria.*—*Wr.*

place, was one of his dogs, which, running into a cave upon pursuit of his master's oxen, Hercules perforce drew him out of that place; from whence the conceits of those days affirmed no less than that Hercules descended into hell, and brought up Cerberus into the habitation of the living. Upon the like grounds was raised the figment of Briareus, who, dwelling in a city called Hecatonchiria, the fancies of those times assigned him an hundred hands. 'Twas ground enough to fancy wings unto Dædalus, in that he stole out of a window from Minos, and sailed away with his son Icarus; who, steering his course wisely, escaped, but his son carrying too high a sail was drowned. That Niobe, weeping over her children, was turned into a stone, was nothing else but that during her life she erected over their sepulchres a marble tomb of her own. When Acteon had undone himself with dogs, and the prodigal attendants of hunting, they made a solemn story how he was devoured by his hounds. And upon the like grounds was raised the anthropophagie * of Diomedes his horses. Upon a slender foundation was built the fable of the Minotaure; for one Taurus, a servant of Minos, gat his mistress, Pasiphae, with child, from whence the infant was named Minotaurus. Now this unto the fabulosity of those times, was thought sufficient to accuse Pasiphae of beastiality, or admitting conjunction with a bull; and in succeeding ages gave a hint of depravity unto Domitian to act the fable into a reality. In like manner, as Diodorus plainly delivereth, the famous fable of Charon had its nativity; who, being no other but the common ferry-man of Egypt that wafted over the dead bodies from Memphis, was make by the Greeks to be the ferry-man of hell, and solemn stories raised after of him.[1]

* Eating of man's flesh.

[1] *In like manner, as Diodorus plainly delivereth, the famous fable of* Charon *had its nativity, &c.*] Two circumstances, for the knowledge of which we are indebted to the modern researches into the literature and antiquities of Egypt (for which the late Dr. Thomas Young opened the way, by his discovery of the method of deciphering the *Hieroglyphics*), concur to prove, not only that Diodorus has faithfully reported the information he received from the Egyptian priests, but also that he was truly informed by them respecting their rites and ceremonies. Both of these occur in the very passages (*Diod. Sic. Bib. Hist. Wess.* § 92, 96) in which is delivered the statement alluded to in the text, relative to the fable of *Charon*. One of them is a remarkable numerical coincidence, pointed out and commented upon by Dr. Young, (*Art.* EGYPT, *Supp. Ency.* (*Brit.* p. 52) between the statement

Lastly, we shall not need to enlarge, if that be true which grounded the generation of Castor and Helena out of an egg, because they were born and brought up in an upper room, according unto the word ὠὸν which with the Lacedæmonians had also that signification.

Fifthly, We applaud many things delivered by the ancients, which are in themselves ordinary, and come short of our conceptions. Thus we usually extol, and our orations cannot

of Diodorus, and the delineations as well as enumerations, of the Egyptian papyri. The other, the importance of which Dr. Young appears not to have observed, although it has become apparent through his researches alone, relates to the name *Charon*. Dr. Young, in his translation of one of the passages in question (*Account of Recent Discoveries in Egypt. Antiq.* p. 104), has, from his knowledge of the Egyptian language, interpolated "the Silent," as the literal meaning of this appellation. Now, that Charon should be an Egyptian word, and that such should be its signification, are circumstances in themselves further strongly corroborative of the truth of the relation of Diodorus; for, with respect to the latter, it was the office of the "ferry-man of *Egypt*, that wafted over the dead bodies from *Memphis*," to wait with his boat, in the presence of the judges, until judgment had been passed upon the deceased, which, as Charon had no part to take in the ceremony, until judgment had been pronounced, he would of course do in solemn silence.

But that the Greeks actually derived their *mythus*, of Charon and his office, from the mere funeral ceremonies of the Egyptians, as represented to Diodorus by the priests, is a notion, which rests, it will be perceived, upon their testimony alone; and that it is untrue various considerations concur to evince. From our present knowledge of the Egyptian mythology, it appears that the ceremonies through which every mummy had to pass, before it was allowed sepulture, formed a kind of mythic drama, intended to represent the successive stages of the judgment, through which the soul of the deceased had to pass, prior to its final allotment to happiness or misery. But the object of all the allegations of the Egyptian priests to Diodorus, being, as is manifest, the aggrandizement of their own country, while they truly related their ceremonies to him, they appear sedulously to have concealed the dogmas, or *mythi*, of which those ceremonies were representative. Hence their statement, that the Greek *mythus* of Charon had been derived from their mere funeral ceremony; while the fact doubtless was, as the entire tenour of mythological literature shews, either that the Greek *mythi* in general (and that of *Charon* as one of them) were derived originally, not from the mere ceremonies, as the priests would have had us believe, but from the *mythi* themselves, of the Egyptians; or that both nations had derived their *mythi* from an anterior common source. *Charon* was in all probability originally the name of the mythic boatman, and subsequently applied also to his mortal representative, so that the proof of the veracity of Diodorus, derived from it, will remain equally valid under the view of the subject now taken. The recent investigations of the *mythi* of the Greeks by Heyne, and other scholars equally competent to the inquiry, have shewn that the origins assigned to them by Palæphatus and others, which Brown usually adopts, are for the most part untenable; and even some of those related, from the Egyptian priests, by Diodorus, notwithstanding the authenticity we have found to belong to his relations, appear, as Dr. Young has observed, (*Account &c.* p. 111) to rest upon "analogies all too slight to be admitted as anything like evidence." The application to these doubtful points, however, so far as the relations of Diodorus are concerned, of the fact already noticed, that the Egyptian ceremonies alluded to were *mythic dramas*, would certainly contribute greatly to their elucidation.—*Br.*

The passage which forms the subject of Mr. Brayley's preceding note was first added in the second edition.

escape the sayings of the wise men of Greece. *Nosce teipsum*, of Thales; *Nosce tempus*, of Pittacus; *Nihil nimis*, of Cleobulus; which, notwithstanding, to speak indifferently, are but vulgar precepts in morality, carrying with them nothing above the line, or beyond the extemporary sententiosity of common conceits with us. Thus we magnifie the apothegms or reputed replies of wisdom, whereof many are to be seen in Laertius, more in Lycosthenes, not a few in the second book of Macrobius, in the Salts of Cicero, Augustus, and the comical wits of those times: in most whereof there is not much to admire, and are, methinks, exceeded, not only in the replies of wise men, but the passages of society, and urbanities of our times. And thus we extol their adages or proverbs; and Erasmus hath taken great pains to make collections of them, whereof, notwithstanding, the greater part will, I believe, unto indifferent judges, be esteemed no extraordinaries; and may be paralleled, if not exceeded, by those of more unlearned nations, and many of our own.

Sixthly, We urge authorities in points that need not, and introduce the testimony of ancient writers, to confirm things evidently believed, and whereto no reasonable hearer but would assent without them; such as are *nemo mortalium omnibus horis sapit. Virtute nil præstantius, nil pulchrius. Omnia vincit amor. Præclarum quiddam veritas.* All which, although known and vulgar, are frequently urged by many men; and though trivial verities in our mouths, yet noted from Plato, Ovid, and Cicero, they become reputed elegancies. For many hundred to instance in one we meet with while we are writing. Antonius Guevara, that elegant Spaniard, in his book entituled, The Dial of Princes, beginneth his epistle thus: "Apollonius Thyanæus, disputing with the scholars of Hiarchas said, that among all the affections of nature, nothing was more natural than the desire all have to preserve life." Which, being a confessed truth, and a verity acknowledged by all, it was a superfluous affectation to derive its authority from Apollonius, or seek a confirmation thereof as far as India, and the learned scholars of Hiarchas.[2]

[2] *Antonius Guevara, &c.*] This practice is well ridiculed by Sterne;—"Tis either Plato, or Plutarch, or Seneca, or Xenophon, or Epictetus, or Theo-

Which, whether it be not all one as to strengthen common dignities and principles, known by themselves, with the authority of mathematicians; or [to] think a man should believe, 'the whole is greater than its parts,' rather upon the authority of Euclide, than if it were propounded alone, I leave unto the second and wiser cogitations of all men. Tis sure a practice that savours much of pedantry; a reserve of puerility we have not shaken off from school; where, being seasoned with minor sentences, by a neglect of higher enquiries, they prescribe upon our riper ears, and are never worn out, but with our memories.

Lastly, While we so devoutly adhere unto antiquity in some things, we do not consider we have deserted them in several others. For they, indeed, have not only been imperfect in the conceit of some things, but either ignorant or erroneous in many more. They understood not the motion of the eighth sphere from west to east, and so conceived the longitude of the stars invariable. They conceived the Torrid Zone unhabitable, and so made frustrate the goodliest part of the earth. But we now know tis very well empeopled,[3] and the habitation thereof esteemed so happy, that some have made it the proper seat of Paradise; and been so far from judging it unhabitable, that they have made it the first habitation of all. Many of the ancients denied the Antipodes, and some unto the penalty of contrary affirmations;[4] but the experience of our enlarged navigations can now assert them beyond all dubitation. Having thus totally relinquished them in some things, it may not be presumptuous to examine them in others; but surely most unreasonable to adhere to them in all, as though they were infallible, or could not err in any.

phrastus, or Lucian, or some one perhaps of later date,—either Cardan, or Buddæus, or Petrarch, or Stella, or possibly it may be some divine or father of the Church, St. Austin, or St. Cyprian, or Bernard, who affirms that it is an irresistible and natural passion to weep for the loss of our friends or children, &c. &c."—*J. Cr.*

[3] *But we now know 'tis very well empeopled.*] See *Sir T. P. Blount's Essays*, p. 137.—*J. Cr.*

[4] *and some, &c.*] Alluding to Virgilius; See *Rel. Med.* p. 39, note 2.

CHAPTER VII.

Of another of the more immediate Causes of Error;—viz. Adherence unto Authority.

Nor is only a resolved prostration unto antiquity a powerful enemy unto knowledge, but any confident adherence unto authority, or resignation of our judgments upon the testimony of any age or author whatsoever.

For, first, to speak generally, an argument from authority, to wiser examinations, is but a weaker kind of proof; it being but a topical probation, and as we term it, an inartificial argument, depending upon a naked asseveration, wherein neither declaring the causes, affections, or adjuncts, of what we believe, it carrieth not with it the reasonable inducements of knowledge. And therefore *contra negantem principia, ipse dixit,* or *oportet discentem credere,*[5] although postulates very accommodable unto junior indoctrinations, yet are their authorities but temporary, and not to be embraced beyond the minority of our intellectuals. For our advanced beliefs are not to be built upon dictates, but having received the probable inducements of truth, we become emancipated from testimonial engagements, and are to erect upon the surer base of reason.

[5] *Contra negantem, &c.*] These three rules althoughe they bee founded on the grounds of universall reason, yet they have theire limits and boundaryes, by which they must be circumscribed. The first reachinge only such perverse spirits, as denye those universall principles of reason and nature, whercin the wisest and soberest judgments of all times have held an unanimous and full consent, and whereon the perpetuall and uncontrouled experience of all mankinde hath agreed. As that the snow is white; and that fire does burne. The former whereof, althoughe some have made not only dispute, but deniall, yet they purchast nothing but scorne and the censure as of brainsick men.

The second is noe where of universall authoritye, save in the booke of God: all other dictates of men, how specious soever, being noe further authenticall to enforce beleefe, then as the reasons are, whereon they are built: but the only reason in God's booke is, because wee know, Hee whose word itt is, is truth ittselfe, and can neither lye, nor deceave, nor bee deceaved: and therefore hath the whole and sole empire of authoritye, to which all humane reason must submitte without dispute or hæsitancye.

The last rule concerns none but those who yeeld up themselves to the instructions and information of others, from whom they must perforce take up upon truste the principles of that arte, which they desire to gaine, till they come to attain unto itt.—*Wr.*

Secondly, unto reasonable perpensions[6] it hath no place in some sciences, small in others, and suffereth many restrictions even where it is most admitted. It is of no validity in the mathematics, especially the mother part thereof, arithmetic and geometry. For these sciences, concluding from dignities and principles known by themselves, receive not satisfaction from probable reasons, much less from bare and peremptory asseverations. And, therefore, if all Athens should decree, that in every triangle, two sides, whichsoever be taken, are greater than the side remaining, or that, in rectangle triangles, the square which is made of the side that subtendeth the right angle, is equal to the squares which are made of the sides containing the right angle; although there be a certain truth therein, geometricians, notwithstanding, would not receive satisfaction without demonstration thereof. 'T is true, by the vulgarity of philosophers there are many points believed without probation; nor if a man affirm from Ptolemy, that the sun is bigger than the earth, shall he probably meet with any contradiction; whereunto notwithstanding astronomers will not assent without some convincing argument or demonstrative proof thereof. And therefore certainly of all men a philosopher should be no swearer: for an oath which is the end of controversies in law, cannot determine any here; nor are the deepest sacraments or desperate imprecations of any force to persuade, where reason only, and necessary mediums must induce.

In natural philosophy, and which is more generally pursued amongst us, it carrieth but slender consideration; for that also proceeding from settled principles, therein is expected a satisfaction from scientifical progressions, and such as beget a sure rational belief. For if authority might have made out the assertions of philosophy, we might have held, that snow was black, that the sea was but the sweat of the earth, and many of the like absurdities.[7] Then was Aristotle injurious to fall upon Melissus, to reject the assertions of Anaxagoras, Anaximander, and Empedocles;[8] then were

[6] *perpensions.*] Considerations.

[7] *that snow was black, &c.*] Attributed to Anaxagoras, a Clazomenian Philosopher who flourished above 400 years B.C.

[8] *Then was Aristotle, &c.*] See Aristotle's discussion of the opinions of these philosophers, in his *Physicks*, lib. i. c. 2, 3, 4.

we also ungrateful unto himself: from whom our junior endeavours embracing many things on his authority, our mature and secondary enquiries are forced to quit those receptions, and to adhere unto the nearer accounts of reason. And although it be not unusual, even in philosophical tractates, to make enumeration of authors, yet are there reasons usually introduced, and to ingenious readers do carry the stroke in the persuasion. And surely if we account it reasonable among ourselves, and not injurious unto rational authors, no farther to abett their opinions, than as they are supported by solid reasons, certainly with more excusable reservation may we shrink at their bare testimonies, whose argument is but precarious, and subsists upon the charity of our assentments.

In morality, rhetorick, law, and history, there is I confess a frequent and allowable use of testimony; and yet herein I perceive it is not unlimitable, but admitteth many restrictions. Thus, in law both civil and divine, that is only esteemed a legal testimony, which receives comprobation from the mouths of at least two witnesses; and that not only for prevention of calumny, but assurance against mistake. Whereas notwithstanding, the solid reason of one man is as sufficient as the clamour of a whole nation, and with imprejudicate apprehensions, begets as firm a belief as the authority or aggregated testimony of many hundreds. For reason being the very root of our natures, and the principles thereof common unto all, what is against the laws of true reason, or the unerring understanding of any one, if rightly apprehended, must be disclaimed by all nations, and rejected even by mankind.

Again, A testimony is of small validity, if deduced from men out of their own professions. So, if Lactantius affirm the figure of the earth is plain,[9] or Austin deny there are Antipodes,[1] though venerable fathers of the church, and ever to be honoured, yet will not their authorities prove sufficient to ground a belief thereon. Whereas, notwithstanding, the solid reason,[2] or confirmed experience of any man, is very

[9] *if Lactantius affirm, &c.*] See *Lactantius De Falsa Sapientia*, l. iii, c. 23.

[1] *or Austin deny, &c.*] "Quod vero et Antipodas esse fabulantur, ... nulla ratione credendum est." *S. Aug. De Civitate Dei*, l. xvi, c. 9.

[2] *the solid reason.*] This is a golden rule, worthye to be written in marble and golde. For as among those that

approvable, in what profession soever. So Raymund Sebund, a physician of Tholouze, besides his learned dialogues *De natura humana*, hath written a natural theology; demonstrating therein the attributes of God, and attempting the like in most points of religion. So Hugo Grotius, a civilian, did write an excellent tract in Dutch, of the Verity of the Christian Religion.[3] Wherein most rationally delivering themselves, their works will be embraced by most that understand them, and their reasons enforce belief, even from prejudicate readers. Neither, indeed, have the authorities of men been ever so awful, but that by some they have been rejected, even in their own professions. Thus Aristotle, affirming the birth of the infant, or time of its gestation, extendeth sometimes unto the eleventh month, but Hippocrates averring that it exceedeth not the tenth;[4] Adrian, the emperor, in a solemn pro-

have the persons of men in adoration, and (for something they admire in them) swallow all that they say as gospel, truth is manye times silentlye smothered, and sometimes violently and furiously not only opposed but oppressed: soe among sober men, and such as entertaine and embrace truth, wherever they find her, shee sodenly advances them to such a highth of honor and reputation, that they become the leaders of learninge and knowledge to after ages, and that deservedly.—*Wr.*

[3] *did write an excellent tract, &c.*] In the first edition, "did write an excellent tract, in Dutch, of the Verity of Christian Religion, and hath since contracted the same into six books in Latin." "Grotius, while a prisoner in the castle of Louvain, wrote, in the Dutch language, 'A treatise on the Truth of the Christian Religion.' He afterwards *enlarged* it, and translated it, so enlarged, into Latin." *Butler's Life of Grotius*, p. 148.

[4] *Thus Aristotle, &c.*] Although Aristotle (in his *Hist. Animal.* vii, cap. 4,) gives instances in which the period of human gestation extends to the eleventh month, he evidently considers them as extreme cases, and agrees with Hippocrates in regarding the tenth as very generally the extreme limit. See his *De Generat. Animal.* l. iv, c. 4. In this opinion they are borne out by the general consent of modern authority both physical and judicial. The doubt indeed is whether even that limit is not too wide. From the *Medical Jurisprudence* of Dr. Paris and Fonblanque, where the subject will be found most elaborately treated—it appears that although there exists a very general opinion among lawyers and medical men, that the period may be protracted to ten calendar months, it is a point scarcely admitting of proof: and many high authorities reject the opinion as untenable. 'Each side is supported by a considerable list of partisans, and we perceive that upon this occasion the two celebrated medico-jurisconsults of France are opposed to each other; *Mahon* having associated his name with those of *Bohn, Hebensteit, Astruc, Mauriceau, De La Motte, Rœderer,* and *Baudeloque,* who reject the belief in *retarded delivery* as impossible, and contrary to the immutable law of nature; while the name of *Foderé* ranges with those who support the contrary opinion, as *Teichmeyer, Heister, Albert, Vallentini, Bartholin, Haller, Antoine Petit, Lietaud, Vicq d'Azyr,* and *Capuran,* also *Dr. Hamilton,* who may boast of the support of *Hippocrates, Aristotle,* and *Pliny.*' *(Medical Jurisprudence,* vol. i, p. 247.)—By the law of Scotland, as stated by Paris and Fonblanque, a child born *ten* months after the death of the father is considered as legitimate; and the civil code of France decrees three hundred days, or *ten* months, to be the most distant period at which the legitimacy of a birth shall be allowed.—*Br.*

cess, determined for Aristotle, but Justinian many years after took in with Hippocrates, and reversed the decree of the other. Thus have councils not only condemned private men, but the decrees and acts of one another. So Galen, after all his veneration of Hippocrates, in some things hath fallen from him; Avicen in many from Galen; and others succeeding from him. And although the singularity of Paracelsus be intolerable, who sparing only Hippocrates, hath reviled not only the authors, but almost all the learning that went before him;[5] yet is it not much less injurious unto knowledge, obstinately and inconvincibly to side with any one. Which humour[6] unhappily possessing many, they have by prejudice withdrawn themselves into parties, and contemning the sovereignty of truth, seditiously abetted the private divisions of error.

[5] *although the singularity of* Paracelsus *be intolerable, &c.*] "Paracelsus began his professional career by burning publicly, in his class-room, and in the presence of his pupils, the works of Galen and Avicenna, assuring his hearers that the strings of his shoes possessed more knowledge than those two celebrated physicians. All the universities united had not, he assured them, as much knowledge as was contained in his own beard, and the hairs upon his head were better informed than all the writers that ever existed put together." This statement is derived from Dr. Thomson's *History of Chemistry* (forming part of the National Library,) vol. i, p. 145, where also, in the following page, is given an extract from the preface to a tract by Paracelsus, entitled *Paragranum*, the arrogance of which amply vindicates the justice of the preceding representation. It may be doubted, however, whether this extreme arrogance and contempt was really felt by Paracelsus, or whether it was merely assumed for the sake of singularity and effect. In a letter written by him to Christopher Clauser, a physician of Zurich, he admits the claims, not only of Hippocrates, but also of Avicenna, Galen, and Marsilius, to be considered the greatest physicians of their respective countries, assuming, however, that he was himself, beyond dispute, the greatest physician among the Germans. The contempt and arrogance with which, however, Paracelsus, in public, certainly treated almost every preceding practitioner and teacher of medical science, were probably required in order to overcome the slavish and superstitious deference to ancient authority which had so long prevailed. As Dr. Thomson has observed (*Hist. of Chem.* vol. i, p. 140,) he "shook the medical throne of Galen and Avicenna to its very foundation; he roused the latent energies of the human mind, which had for so long a period lain torpid; he freed medical men from those trammels, and put an end to that despotism which had existed for five centuries."—*Br.*

[6] *Which humour, &c.*] This humour is itt which hath engaged the whole world into factions, not only amongst Christians, but even Jews, Turks, and Infidels. And being once planted is hardly ever rooted out. For that they who have once swallowed an error (act of ignorance, inadvertence, or the tye of observance and relation to some on whom they depend) are ever loath to acknowledge, but more to renounce itt, though in pointe of conscience they be often convinced of itt; least, being thought to have faultered in one thing, they may come to question, and bring into suspicion, whatever they shall allow for the future. —*Br.*

Moreover, a testimony in points historical, and where it is of unavoidable use, is of no illation[7] in the negative; nor is it of consequence,[8] that, Herodotus writing nothing of Rome, there was therefore no such city in his time, or because Dioscorides hath made no mention of unicorn's horn, there is therefore no such thing in nature. Indeed, intending an accurate enumeration of medical materials, the omission hereof affords some probability it was not used by the ancients, but will not conclude the non-existence thereof. For so may we annihilate many simples unknown to his enquiries, as senna, rhubarb, bezoa, ambergris, and divers others. Whereas indeed the reason of man hath not such restraint; concluding not only affirmatively, but negatively; not only affirming there is no magnitude beyond the last heavens, but also denying there is any vacuity within them. Although it be confessed, the affirmative hath the prerogative illation, and barbara[9] engrosseth the powerful demonstration.

Lastly, The strange relations made by authors may sufficiently discourage our adherence unto authority, and which, if we believe, we must be apt to swallow any thing. Thus Basil[1] will tell us, the serpent went erect like man, and that that beast could speak before the fall. Tostatus would make us believe that Nilus encreaseth every new moon. Leonardo Fioravanti, an Italian physician, beside many other secrets, assumeth unto himself the discovery of one concerning pellitory of the wall; that is, that it never groweth in the sight of the North star,—(*"dove si possa vedere la stella Tramontana;"*) wherein how wide he is from truth is easily discoverable unto every one, who hath but astronomy enough to know that star. Franciscus Sanctius, in a laudable comment upon Alciat's emblems, affirmeth, and that from experience,

[7] *is of no illation.*] "Affords no inference."

[8] *nor is it of consequence.*] "Nor does it follow as a consequence."

[9] *barbara.*] The affirmative proposition: see note [6], p. 194.

[1] *Thus Basil.*] See Book v, chap. iv. And this is the only reason that holds the church of Rome in an obstinate maintenance of some ridiculous, some scandalous, some pernicious, some blasphemous doctrines: For feare that by the acknowledgement of them they shall loose their credit and authoritye. And that the acknowledgement enforcing their renunciation and desertion of them, they shall withall loose the merit, profit, and gaine, which they reape from the numerous proselytes: whose consciences they have fettered and chained unto them, by these powerfull overawinge chaines, and (as they call them) pious fraudes.—*Wr.*

a nightingale hath no tongue; (*"avem Philomelam lingua carere pro certo affirmare possum, nisi me oculi fallunt;"*) which if any man for a while shall believe upon his experience, he may at his leisure refute it by his own. What fool almost would believe, at least, what wise man would rely upon, that antidote delivered by Pierius in his hieroglyphicks against the sting of a scorpion,—that is, to sit upon an ass with one's face towards his tail, for so the pain leaveth the man, and passeth into the beast. It were, methinks, but an uncomfortable receipt for a quartane ague (and yet as good perhaps as many others used) to have recourse unto the receipt of Sammonicus; that is, to lay the fourth book of Homer's Iliad under one's head, according to the precept of that physician and poet, *Mœoniæ Iliados quartum suppone trementi.* There are surely few that have belief to swallow, or hope enough to experiment the *collyrium** of Albertus, which promiseth a strange effect, and such as thieves would count inestimable, that is, to make one see in the dark; yet thus much, according unto his receipt, will the right eye of an hedgehog boiled in oil, and preserved in a brazen vessel, effect. As strange it is, and unto vicious inclinations were worth a night's lodging with Lais,† what is delivered in Kiranides; that the left stone of a weasel, wrapt up in the skin of a she-mule, is able to secure incontinency from conception.

These, with swarms of others, have men delivered in their writings, whose verities are only supported by their authorities; but being neither consonant unto reason, nor correspondent unto experiment, their affirmations are unto us no axioms. We esteem thereof as things unsaid, and account them but in the list of nothing. I wish herein the chymists had been more sparing; who, over-magnifying their preparations, inveigle the curiosity of many, and delude the security of most. For if experiments would answer their encomiums, the stone and quartane agues were not opprobrious unto physicians;[2] we might contemn that first and most uncomfortable aphorism of Hippocrates,‡ for surely that art were soon

* An eye medicine. † Ten thousand drachms. ‡ Ars longa, vita brevis.

[2] *opprobrious unto physicians.*] By being very difficult of cure.

attained, that hath so general remedies, and life could not be short, were there such to prolong it.

CHAPTER VIII.

Of Authors who have most promoted Popular Conceit.

Now, forasmuch as we have discoursed of authority, and there is scarce any tradition or popular error but stands also delivered by some good author, we shall endeavour a short discovery of such as for the major part have given authority hereto; who, though excellent and useful authors, yet either being transcriptive, or following common relations, their accounts are not to be swallowed at large, or entertained without all circumspection. In whom *ipse dixit*, although it be no powerful argument in any, is yet less authentic than in many other, because they deliver not their own experiences, but others' affirmations, and write from others, as we ourselves from them.

1. The first in order, as also in time, shall be Herodotus, of Halicarnassus,[3] an excellent and very elegant historian;

[3] *Herodotus of Halicarnassus.*] It will be useful to place in apposition with our author's statement, respecting the writings of this historian, the opinion of their authenticity and character, so far as they relate to the History of Egypt, formed by one of the most sagacious investigators of ancient history of the present age. Since the early history of Egypt claims a much higher antiquity than that of almost any other nation, and is consequently involved in obscurity more impenetrable, if the relations of any ancient writer *respecting it* are found to be substantially correct, we may conclude, *a fortiori*, that his account of *other nations* also deserves our confidence.

"The only original authorities," observes Dr. Young, "on which we can depend for the early history of Egypt, are those of *Herodotus*, Manetho, Eratosthenes, Diodorus Siculus, and Strabo; all of whom had been more or less in the country. *Herodotus* lived soon after the conquest of Egypt by Cambyses, when the names of the later monarchs could not easily have been forgotten. The earlier part of his history is of a much more apocryphal nature: he does not, however, continue the series of the kings further back than Sesostris and Moeris: so that almost all his names are sufficiently recent to be considered as completely within the province of legitimate history." * * * * "The stories of Herodotus, though told with an elegant simplicity, and with every appearance of good faith, are by no means free from a frequent mixture of fable; and, with respect to his Egyptian etymologies, he is almost universally mistaken; but his account of the ceremonies observed in the preparation of the mummies has many marks of authenticity, and he is perfectly correct in asserting, that the most splendid of the coffins are formed

whose books of history were so well received in his own days, that, at their rehearsal in the Olympick games, they obtained the names of the nine muses; and continued in such esteem unto descending ages that Cicero termed him *historiarum parens;* and Dionysius, his countryman, in an epistle to Pompey, after an express comparison, affords him the better of *Thucydides.* All which notwithstanding, he hath received from some the style of *mendaciorum pater.* His authority was much infringed by Plutarch, who, being offended with him, as Polybius had been with Philarchus, for speaking too coldly of his countrymen, hath left a particular tract, *De malignitate Herodoti.* But in this latter century Camerarius

in imitation of the figures of Osiris; a circumstance which he could not easily have conjectured without direct and accurate information." *Supp. Ency. Brit. art.* EGYPT, p. 47, 52.

Of the above testimony to the fidelity of Herodotus, the writer of the present note is enabled to give a strong confirmation in one particular. Dr. Young, arguing from general grounds, observes, as above, that the account of the preparation of the mummies given by that historian "has many marks of authenticity." But the minute examination to which a very perfect mummy was subjected by Dr. Granville, a few years since, appeared to justify strong doubts of the correctness of the statements of Herodotus respecting the Egyptian processes of embalming; the mummy in question having been prepared by a very different method. However, another mummy, in as perfect a condition as the former, has recently been described by Mr. Osburn, Secretary to the Philosophical and Literary Society of Leeds, which, as he has shewn, must have been prepared, in every particular, by the process described by Herodotus and Diodorus Siculus as the most perfect mode of embalming practised by the Egyptians. The opinion antecedently expressed by Dr. Young, before any perfect mummies had been examined, is therefore fully confirmed, and the authority of Herodotus supported, on a subject of Egyptian history, on which, of almost all others, it must have been most difficult to acquire precise and correct knowledge. The weight which this train of circumstances imparts to the character of Herodotus, as a faithful historian, will readily be appreciated by the student of ancient history. *Phil. Trans.* 1825; *Phil. Mag. and Annals, N. S.* vol. v, p. 57, 1829. Some very remarkable and important points, in which even the *minute* accuracy of Herodotus has been established, are connected with his account (lib. i, s. 74) of the eclipse stated to have been predicted by Thales, and which, owing to a very singular coincidence, put an end to a furious war that raged between Cyaxases King of Media, and Alyattes King of Lydia. The investigations by which his accuracy on these points has been determined cannot be detailed in this place, but a full account of them will be found in "*Brayley's Utility of the Knowledge of Nature considered; with reference to the Introduction of Instruction in the Physical Sciences into the General Education of Youth.*" London, 1831, 8vo.

As the extreme accuracy which we have thus seen the statements of Herodotus to possess, with relation to subjects on which it must have been difficult to obtain correct information, and with respect also to others requiring very nice observation, unquestionably guarantee his general fidelity, we have entered into these remarks, for the purpose of shewing that he is much more worthy of the title of *Historiarum parens,* than of that of *Mendaciorum pater.* With the exceptions arising from the facts we have detailed, and viewed agreeably to the general bearing of those facts, the character of Herodotus given by our author may be regarded as substantially correct. —*Br.*

and Stephanus have stepped in, and, by their witty apologies, effectually endeavoured to frustrate the arguments of Plutarch or any other. Now, in this author, as may be observed in our ensuing discourse, and is better discernable in the perusal of himself, there are many things fabulously delivered, and not to be accepted as truths; whereby, nevertheless, if any man be deceived, the author is not so culpable as the believer. For he, indeed, imitating the father poet, whose life he hath also written, and as Thucydides observeth, as well intending the delight as benefit of his reader, hath besprinkled his work with many fabulosities; whereby if any man be led into error he mistaketh the intention of the author (who plainly confesseth he writeth many things by hear-say) and forgetteth a very considerable caution of his; that is, *Ego quæ fando cognovi, exponere narratione mea debeo omnia: credere autem esse vera omnia, non debeo.*

2. In the second place is Ctesias the Cnidian,[4] physician unto Artaxerxes, king of Persia. His books are often recited

[4] *Ctesias the Cnidian.*] The sum of our author's remarks on the authority of Ctesias is probably very near the truth; but in this instance again the researches of modern science have in a great degree rescued from obloquy the statements of ancient history. The descriptions given by Ctesias of many animals, which, as he alleges, are found in Persia and India, and his relations concerning the uses to which many objects of nature are applied by the inhabitants of those countries, are now known either to be actually true, or at least to be founded in truth. In other cases it has been shewn that he has correctly described certain objects as represented in paintings or sculptures, but has erroneously attributed an actual existence to what were merely the offspring of the imagination of the artists, or of the priests who instructed them. The historical relations of Ctesias, like those of Manetho and others, which have until recently been deemed altogether apocryphal, have received confirmation in many points, from the researches into the early history of Asia and Egypt, which our own age has witnessed; and it is impossible to say how many which yet appear untrue, may be attributable to the errors of transcribers. As an instance of his marvellous and incredible relations which have proved to be positively true, we will cite an anticipation of modern discovery contained in his fragments relating to India, which was pointed out a few years since, by the late Rev. J. J. Conybeare, successively professor of Anglo-Saxon and of poetry in the University of Oxford. Ctesias relates (*Ex Ctes. Ind. Hist. Excerpt. in app. Herodot. Wesseling. sub initio*, p. 827,) that a certain variety of iron is found in India, which, when fixed into the ground, has the power of averting storms and lightnings. See *Annals of Philosophy, Sec. Ser.* vol. iv, p. 439. This evidently describes an anticipation of the use of conductors for lightning. Prior, however, to the discovery of the nature of lightning, and to the invention, founded upon that discovery, of metallic conductors for conveying the electric fluid, of which lightning is a manifestation, silently and innocuously to the earth, about the middle of the last century, every reader would suppose that Ctesias, in the passage before us, was relating, not a philosophical truth, but an unfounded absurdity; and would regard it as one of the "strange and incredible

by ancient writers, and, by the industry of Stephanus and Rhodomanus, there are extant some fragments thereof in our days. He wrote the history of Persia, and many narrations of India. In the first, as having a fair opportunity to know the truth, and as Diodorus affirmeth, the perusal of Persian records, his testimony is acceptable.[5] In his Indian relations, wherein are contained strange and incredible accounts, he is surely to be read with suspension. These were they which weakened his authority with former ages; for, as we may observe, he is seldom mentioned without a derogatory parenthesis in any author. Aristotle, besides the frequent undervaluing of his authority in his books of animals, gives him the lie no less than twice concerning the seed of elephants. Strabo, in his eleventh book, hath left a harder censure of him:[6] *Equidem facilius Hesiodo et Homero aliquis fidem adhibuerit, itemque tragicis poetis, quam Ctesiæ, Herodoto, Hellanico et eorum similibus.* But Lucian hath spoken more plainly than any: *Scripsit Ctesias de Indorum regione, deque iis quæ apud illos sunt, ea quæ nec ipse vidit, neque ex ullius sermone audivit.* Yet were his relations taken up by some succeeding writers, and many thereof revived by our countryman, Sir John Mandevil, knight and doctor in physick; who, after thirty years peregrination, died at Liege, and was

accounts," which, according to our author, are contained "in his *Indian* relations."

Bearing all these circumstances in mind, the reader, by comparing our author's remarks on Ctesias with the following notes, (marked *Br.*,) will have the means of forming a correct opinion respecting the merits of that writer.—*Br.*

[5] *perusal of Persian records, &c.*] In his account of the origin of the Assyrian empire, however, which he professes to have derived from the regal archives of the Medes, he differs considerably from Herodotus, who must be regarded, in this case, as by far the most authentic historian; and he also attributes to the conquests of Ninus and Semiramis an extent towards the west, which is absolutely incompatible with the Jewish and Egyptian history of the same periods. (See *Cuvier, Discours sur les Revolutions de la Surface du Globe*, 4to, Paris, 1826, p. 101.)—*Br.*

[6] *Strabo, in his eleventh book, &c.*] Cuvier has remarked (*Discours, ubi sup.* p. 102) that Strabo was apparently led to this censure from the want of accordance between the various accounts of the antiquity of the Assyrian empire given by Ctesias and other ancient writers. But his ranking Ctesias with Herodotus, whose veracity has been established in modern times, in a manner so irrefragable, is in fact a testimony of considerable weight to the fidelity of the former. In reference to this particular subject Cuvier also alludes to the manifest errors of transcribers, in the fragments of Ctesias which are extant. Upon the whole, therefore, this writer ought not in any degree to suffer in our estimation on account of Strabo's censure.—*Br.*

there honourably interred.[7] He left a book of his travels, which hath been honoured with the translation of many languages, and now continued above three hundred years; herein he often attesteth the fabulous relations of Ctesias, and seems to confirm the refuted accounts of antiquity. All which may still be received in some acceptions of morality, and to a pregnant invention may afford commendable mythology; but in a natural and proper exposition, it containeth impossibilities, and things inconsistent with truth.[8]

3. There is a book *De mirandis auditionibus*, ascribed unto Aristotle; another *De mirabilibus narrationibus*, written long after by Antigonus; another also of the same title by Plegon Trallianus, translated by Xilander, and with the annotations of Meursius, all whereof make good the promise of their titles, and may be read with caution. Which if any man shall likewise observe in the lecture of Philostratus concerning the life of Apollonius, and even in some passages of the sober and learned Plutarchus, or not only in ancient writers, but shall carry a wary eye on Paulus Venetus, Jovius, Olaus Magnus, Nierembergius, and many others, I think his circumspection is laudable, and he may thereby decline occasion of error.

Sir John Manderille, &c.] Though spoken of by Sale (in his Preliminary Discourse, p. 177, *note*), by Parkhurst (Heb. Lex. p. 259, third edition), and by Chalmers, as entitled to more credit than has been usually assigned him, Mandeville's work is pronounced by Dr. Hugh Murray, to be "a pure and entire fabrication." Chalmers remarks, "that Sir John honestly acknowledges that his book was made partly of hearsay, and partly of his own knowledge; and that he prefaces his most improbable relations with some such words as these, *thei seyne*, or *men seyn, but I have not sene it*:"—and concludes that "there does not appear to be any very good reason *why Sir John should not be believed in any thing that he relates on his own observation.*" He further observes that some of his improbabilities have been since verified; e. g. his hens that bore wool, &c. &c. Murray on the other hand asserts that Mandeville, not content with transplanting the fictions of Oderic, and other writers into his narrative, declares himself to have actually *seen* what they had only heard of. He is quite of opinion that Sir John compiled the greater and the most valuable part of his travels from Oderic, Carpini, Rubruquis, &c. and *that what he has added of his own consists, quite exclusively, of monstrous lies.*

[8] *All which may still be received, &c.*] The truth and sagacity of this remark, taken in application to Ctesias himself, is beautifully illustrated by the following circumstances noticed by Cuvier, (*ubi sup.* p. 40):—When treating of the mythological (or rather *mythical*) animals of the Persians, he observes, "Ctesias, who has described these animals as actually existing, has been regarded by many authors as an inventor of fables, while, in fact, he has merely attributed reality to emblematical figures;" and he shews, in the sequel, that the imaginary beings in question (such as the griffin, &c.) are represented in the sculptures of Persepolis, from which, or from similar works of art, it is manifest that Ctesias described them.—*Br.*

4. Dioscorides Anazarbeus, he wrote many books in physick, but six thereof, *De Materia Medica*, have found the greatest esteem. He is an author of good antiquity and better use, preferred by Galen before Cratevas, Pamphilus, and all that attempted the like description before him; yet all he delivereth therein is not to be conceived oraculous. For beside that (following the wars under Anthony,) the course of his life would not permit a punctual *examen* in all, there are many things concerning the nature of simples traditionally delivered, and to which I believe he gave no assent himself. It had been an excellent receipt, and in his time when saddles were scarce in fashion,[9] of very great use, if that were true which he delivers, that *vitex*[1] or *agnus castus* held only in the hand, preserveth the rider from galling. It were a strange effect, and whores would forsake the experiment of *savine*, if that were a truth which he deliyereth of brake or female fearn, that only treading over it, it causes a sudden abortion.* It were to be wished true, and women would idolize him, could that be made out which he recordeth of phyllon, mercury, and other vegetables, that the juice of the male plant drunk, or the leaves but applied unto the genitals, determines their conceptions unto males. In these relations although he be more sparing, his predecessors were very numerous, and Galen hereof most sharply accuseth Pamphilus. Many of the like nature we meet sometimes in Oribasius, Ætius, Trallianus, Serapion, Evax, and Marcellus, whereof some containing no colour of verity, we may at first sight reject them; others which seem to carry some face of truth, we may reduce unto experiment. And herein we shall rather perform good offices unto truth, than any disservice unto their relators, who have well deserved of succeeding ages; from whom having received the conceptions of former times,

* A like opinion there is now of elder.—*Note first added in Second Edition.*

[9] *when saddles were scarce in fashion.*] They were not invented till long after, probably about the fourth century: though some kinds of horse cloths composed of various materials more or less costly were used at a much earlier period. See *Beckman's History of Inventions and Discoveries*, vol. ii, 247.

[1] *that vitex.*] Yet that is true which hee sayes, that *persicaria* bruised, and layd under ye sadle, cures a galled horse in the jornye.—*Wr.*

we have the readier hint of their conformity with ours, and may accordingly explore and sift their verities.

5. Plinius Secundus[2] of Verona; a man of great eloquence, and industry indefatigable, as may appear by his writings, especially those now extant, and which are never like to perish, but even with learning itself; that is his *Natural History*. He was the greatest collector or rhapsodist[3] of all the Latins, and as Suetonius de Viris Illustribus observeth, he collected this piece out of two thousand Latin and Greek authors. Now what is very strange, there is scarce a popular error passant in our days, which is not either directly expressed, or deductively contained in this work; which being in the hands of most men, hath proved a powerful occasion of their propagation. Wherein, notwithstanding, the credulity of the reader is more condemnable than the curiosity of the author; for commonly he nameth the authors from whom he received those accounts, and writes but as he reads, as in his preface to Vespasian he acknowledgeth.

6. Claudius Ælianus, who flourished not long after, in the reign of Trajan, unto whom he dedicated his Tacticks; an elegant and miscellaneous author. He hath left two books which are in the hands of every one, his History of Animals, and his Varia Historia. Wherein are contained many things suspicious, not a few false, some impossible; he is much be-

[2] *Plinius Secundus.*] It will be interesting to compare, with our author's estimate of the authority of Pliny, the following view of the merits of a considerable portion of the contents of his Natural History, taken by a modern man of science, profoundly versed in the history of the science whose progress he details, and to which the portion of Pliny in question principally relates. "The only exception to this general neglect and contempt for all the arts and trades, is Pliny the Elder, whose object, in his Natural History, was to collect into one focus every thing that was known at the period when he lived. His work displays prodigious reading, and a vast fund of erudition. It is to him that we are chiefly indebted for the knowledge of the chemical arts that were practised by the ancients. But the low estimation in which these arts were held appears evident, from the wonderful want of information which Pliny so frequently displays, and the erroneous statements which he has recorded respecting these processes. Still a great deal may be drawn from the information which has been collected and transmitted to us by this indefatigable natural historian." (*Thomson's History of Chemistry*, vol i, p. 50.)—*Br.*

[3] *rhapsodist.*] One who writes without any regular dependance of one part upon another.—*Johnson.* I am, however, much more inclined to think that Sir Thomas meant by *rhapsodist*, one who packs together (from ῥαπτω, *consarcino,*) materials collected from various sources.

holding[4] unto Ctesias, and in many uncertainties writes more confidently than Pliny.

7. Julius Solinus, who lived also about his time. He left a work entitled Polyhistor, containing great variety of matter, and is with most in good request at this day. But to speak freely what cannot be concealed, it is but Pliny varied, or a transcription of his Natural History; nor is it without all wonder it hath continued so long, but is now likely, and deserves indeed to live for ever, not only for the elegancy of the text, but the excellency of the comment, lately performed by Salmasius, under the name of Plinian Exercitations.

8. Athenæus,[5] a delectable author, and very various, and justly styled by Casaubon, Græcorum Plinius. There is extant of his, a famous piece, under the name of Deipnosophista, or Cœna Sapientium, containing the discourse of many learned men, at a feast provided by Laurentius. It is a laborious collection out of many authors, and some whereof are mentioned no where else. It containeth strange and singular relations, not without some spice or sprinkling of all learning. The author was probably a better grammarian than philosopher, dealing but hardly with Aristotle and Plato, and betrayeth himself much in his chapter *De Curiositate Aristotelis*. In brief, he is an author of excellent use, and may with discretion be read unto great advantage; and hath therefore well deserved the comments of Casaubon and Dalecampius. But being miscellaneous in many things, he is to be received with suspicion;[6] for such as amass all relations must erre in some, and may without offence be unbelieved in many.

9. We will not omit the works of Nicander, a poet of good antiquity; that is, his Theriaca, and Alexipharmaca, translated and commented by Gorræus: for therein are contained several traditions, and popular conceits of venomous beasts; which only deducted, the work is to be embraced, as con-

[4] *beholding.*] See note, chap. vi. p. 218.

[5] *Athenæus.*] A very favourite author with Sir Thomas. See his *Remarks on Athenæus.*

[6] *He is to be received with suspicion.*] We need have noe great suspition of him, going under the garde of these learned men; who will not suffer you to bee led by him, into any knowne or suspected error.—*Wr.*

taining the first description of poisons and their antidotes, whereof Dioscorides, Pliny, and Galen, have made especial use in elder times; and Ardoynus Grevinus, and others, in times more near our own. We might perhaps let pass Oppianus, that famous Cilician poet. There are extant of his in Greek, four books of Cynegeticks or Venation, five of Halieuticks or Piscation, commented and published by Ritterhusius; wherein, describing beasts of venery, and fishes, he hath indeed but sparingly inserted the vulgar conceptions thereof. So that abating the annual mutation of sexes in the hyæna, the single sex of the rhinoceros, the antipathy between two drums, of a lamb and a wolf's skin, the informity of cubs, the venation of Centaures, the copulation of the murena and the viper, with some few others, he may be read with great delight and profit. It is not without some wonder his elegant lines are so neglected. Surely, hereby we reject one of the best epic poets,* and much condemn the judgment of Antoninus, whose apprehensions so honoured his poems that, as some report, for every verse he assigned him a stater of gold.

10. More warily are we to receive the relations of Philes, who, in Greek iambicks, delivered the proprieties of animals; for herein he hath amassed the vulgar accounts recorded by the ancients, and hath therein especially followed Ælian. And likewise Johannes Tzetzes,[7] a grammarian, who, besides a comment upon Hesiod and Homer, hath left us *Chiliads de Varia Historia;* wherein delivering the accounts of Ctesias, Herodotus, and most of the ancients, he is to be embraced with caution, and as a transcriptive relator.[8]

11. We cannot, without partiality, omit all caution even of holy writers, and such whose names are venerable unto all posterity. Not to meddle at all with miraculous authors, or any legendary relators, we are not without circumspection to receive some books even of authentic and renowned fathers. So are we to read the leaves of Basil and Ambrose, in their

* That write hexameters, or long verses.

[7] *Johannes Tzetzes.*] Tzetzes ventisossimus.—*Wr.*

[8] *A transcriptive relator.*] N. B. justissimam censuram.—*Wr.*

books entituled *Hexameron*,[9] or The Description of the Creation; wherein, delivering particular accounts of all the creatures, they have left us relations suitable to those of Ælian, Pliny, and other natural writers, whose authorities herein they followed, and from whom, most probably, they desumed their narrations. And the like hath been committed by Epiphanius in his Physiology; that is, a book he hath left concerning the nature of animals. With no less caution mustwe look on Isidore, bishop of Seville; who, having left in twenty books an accurate work *De Originibus*, hath to the etymology of words superadded their received natures; wherein, most generally, he consents with common opinions and authors which have delivered them.

12. Albertus, bishop of Ratisbone, for his great learning and latitude of knowledge, surnamed Magnus. Besides divinity, he hath written many tracts in philosophy; what we are chiefly to receive with caution, are his Natural Tractates, more especially those of minerals, vegetables, and animals, which are indeed chiefly collections out of Aristotle, Ælian, and Pliny, and respectively contain many of our popular errors. A man who hath much advanced these opinions by the authority of his name, and delivered most conceits, with strict enquiry into few. In the same classes may well be placed Vincentius Belluacensis,[1] or rather he from whom he collected his *Speculum Naturale*, that is, Gulielmus de Conchis, and

[9] *Hexameron.*] St. Basil and St. Ambrose in their hexameron: instead whereof wee have Du Bartas, an elegant and modest writer: justly honoured by (two) excellent poets, his translatores: Hieronymus Vida of Cremona, a second Virgil, who turned him into Latin verse, most smoothlye; and our Sylvester, a second Spencer, who hath soe finely fitted him with an English garbe, that itt seemes to become him as handsomelie, as his owne native French.—*Wr.*

[1] *Vincentius Belluacensis.*] The following statement of the merits of Vincent of Beauvais is given by the late Rev. J. J. Conybeare, in his account of the *Symbola Aureæ Mensæ Duodecim Nationum* of Michael Maier, published in the *Annals of Philosophy, Sec. Ser.* vol. vi, p. 428:—"Vincent of Beauvais, . . . certainly one of the most laborious and generally informed writers of the middle ages. His *Speculum Naturale* is the largest and most interesting Encyclopædia which I know of the philosophy and natural history of that period. It seems to have been laid under contribution pretty largely, if not altogether copied, in a work better known to our own black letter students, "*Bartholomæus de proprietatibus rerum*" (alluded to by our author in the same paragraph.) "I have now before me what a bibliographer would term a venerable and perfect copy of Vincent's S. N. (Cologne, 1494.) The sixth and seventh books contain much alchemical matter, chiefly extracted from Avicenna and a work termed Alchemiste."—*Br.*

also Hortus Sanitatis, and Bartholomeus Glanvil, sirnamed Anglicus, who writ *De proprietatibus Rerum.* Hither also may be referred Kiranides, which is a collection out of Harpocration, the Greek, and sundry Arabic writers; delivering not only the natural but magical propriety of things; a work as full of vanity as variety, containing many relations, whose invention is as difficult as their beliefs, and their experiments sometime as hard as either.

13. We had almost forgot Jeronymus Cardanus,[2] that famous physician of Milan, a great enquirer of truth, but too greedy a receiver of it. He hath left many excellent discourses, medical, natural, and astrological; the most suspicious are those two he wrote by admonition in a dream, that is *De Subtilitate* and *Varietate Rerum.* Assuredly this learned man hath taken many things upon trust, and although he examined some, hath let slip many others. He is of singular use unto a prudent reader; but unto him that only desireth *hoties,*[3] or to replenish his head with varieties, like many others before related, either in the original or confirmation, he may become no small occasion of error.

14. Lastly, authors are also suspicious, not greedily to be swallowed, who pretend to write of secrets, to deliver antipathies, sympathies, and the occult abstrusities of things; in the list whereof may be accounted, Alex. Pedimontanus, Antonius Mizaldus, Trinum Magicum, and many others. Not omitting that famous philosopher of Naples, Baptista Porta; in whose works, although there be contained many excellent things, and verified upon his own experience, yet are there many also receptary,[4] and such as will not endure the test. Who, although he hath delivered many strange relations in his Phytognomonica,[5] and his Villa, yet hath he

[2] *Cardanus.*] There is a most copious and interesting account of Cardan, and review of his works (ascribed to James Crossley, Esq. of Manchester), in the *Retrospective Review*, vol. i, p. 94–112.

[3] *hoties.*] i. e. the quiddities of things, for τὸ ὅτι, in Greek, signifies the quiddity, that is, the essential or formal cause of every thing in nature.—*Wr.*

[4] *receptary.*] "Generally or popularly admitted." Dr. Johnson quotes the present passage, but spells the word *receptory.*

[5] *Phytognomonica.*] "I would recommend the treatise of Baptista Porta, on Physiognomy, as an excellent commentary on that of Aristotle." Thos. Taylor's Introduction to his translation of Aristotle's *History of Animals* and *Treatise on Physiognomy*, p. xx.—*Br.*

more remarkably expressed himself in his Natural Magick,[6] and the miraculous effects of nature. Which containing various and delectable subjects, with all promising wondrous and easy effects, they are entertained by readers at all hands; whereof the major part sit down in his authority, and thereby omit not only the certainty of truth, but the pleasure of its experiment.

Thus have we made a brief enumeration of these learned men; not willing any to decline their works, (without which it is not easy to attain any measure of general knowledge,) but to apply themselves with caution thereunto. And seeing the lapses of these worthy pens, to cast a wary eye on those diminutive and pamphlet treatises[7] daily published amongst us. Pieces maintaining rather typography than verity, authors presumably writing by common places, wherein for many years promiscuously amassing all that makes for their subject, they break forth at last in trite and fruitless rhapsodies,[8] doing thereby not only open injury unto learning, but committing a secret treachery upon truth. For their relations falling upon credulous readers, they meet with prepared beliefs; whose supinities[9] had rather assent unto all, than adventure the trial of any.

Thus, I say, must these authors be read, and thus must we be read[1] ourselves; for discoursing of matters dubious, and many controvertible truths, we cannot without arrogancy entreat a credulity, or implore any further assent, than the probability of our reasons and verity of experiments induce.

[6] *Natural Magick.*] "That strange mixture of learning and absurdity:" J. J. Conybeare, *Ann. Phil. Sec. Ser.* vol. iv, p. 436. A judgment quite in accordance with our author's on the merits of the works of Baptista Porta in general.—*Br.*

[7] *And seeing the lapses of these worthy pens, to cast a wary eye on those diminutive and pamphlet treatises.*] A most useful and prudent caution.—*Wr.*

[8] *rhapsodies.*] Things thrown together without mutual relation: mere collections.

[9] *whose supinities.*] Whose indolence.

[1] *and thus must we be read.*] This is such a modest profession, as makes me wonder that any man should undertake to quarrel with him, as one of late hath professedly done.—*Wr.*

The Dean refers of course to Alexander Ross's *Arcana Microcosmi*, and Robinson's *Endoxa*.

CHAPTER IX.

Of others indirectly effecting the same.

THERE are, beside these authors and such as have positively promoted errors, divers other which are in some way accessory; whose verities, although they do not directly assert, yet do they obliquely concur unto their beliefs.[2] In which account are many holy writers, preachers, moralists, rhetoricians, orators, and poets; for they depending upon invention, deduce their mediums from all things whatsoever; and playing much upon the simile, or illustrative argumentation, to induce their enthymemes unto the people,[3] they take up popular conceits, and from traditions unjustifiable, or really false, illustrate matters of undeniable truth. Wherein, although their intention be sincere, and that course not much condemnable, yet doth it notoriously strengthen common errors, and authorise opinions injurious unto truth.

Thus have some divines drawn into argument the fable of the phœnix, made use of that of the salamander, pelican, basilisk, and divers relations of Pliny, deducing from thence most worthy morals, and even upon our Saviour. Now, although this be not prejudicial unto wiser judgments, who are but weakly moved with such arguments, yet is it oft-times occasion of error unto vulgar heads, who expect in the fable as equal a truth as in the moral, and conceive that infallible philosophy, which is in any sense delivered by divinity. But wiser discerners do well understand that every art hath its own circle; that the effects of things are best examined by sciences wherein are delivered their causes; that strict and definitive expressions are always required in philosophy, but a

[2] *unto* their *beliefs.*] Unto the belief *of errors.*

[3] *to induce their enthymemes, &c.*] An *enthymem* is an imperfect syllogism, where either the *major* or the *minor* is omitted, as being easily supplied by the understanding. The term, however, seems used here in no such precise signification. The author merely means to say, that, to obtain readier assent to the *maxims* or *propositions* delivered, preachers, moralists, &c. have garnished them with popular though erroneous conceits.

loose and popular delivery will serve oftentimes in divinity.[4] As may be observed even in Holy Scripture, which often omitteth the exact account of things, describing them rather to our apprehensions, than leaving doubts in vulgar minds upon their unknown and philosophical descriptions. Thus it termeth the sun and the moon, the two great lights of heaven. Now if any shall from hence conclude the moon is second in magnitude unto the sun, he must excuse my belief; and it cannot be strange if[5] herein I rather adhere unto the demonstration of Ptolemy, than the popular description of Moses. Thus it is said (2 Chron. 4, 2,) "That Solomon made a molten sea of ten cubits from brim to brim round in compass, and five cubits the height thereof, and a line of thirty cubits did compass it round about." Now in this description the circumference is made just treble unto the diameter; that is, as 10 to 30, or 7 to 21. But Archimedes demonstrates [in his Cyclometria] that the proportion of the diameter unto the circumference is as 7 unto almost 22, which will occasion a sensible difference, that is almost a cubit. Now, if herein I adhere unto Archimedes, who speaketh exactly, rather than the sacred text, which speaketh largely, I hope I shall not offend divinity; I am sure I shall have reason and experience of every circle to support me.

Thus moral writers, rhetoricians, and orators, make use of several relations, which will not consist with verity. Aristotle in his ethics takes up the conceit of the beaver, and the divulsion of his testicles. The tradition of the bear, the viper, and divers others are frequent amongst orators. All which, although unto the illiterate and undiscerning hearers [it] may seem a confirmation of their realities, yet this is no reasonable establishment unto others, who will not depend hereon, otherwise than on common apologues; which being of im-

[4] *A loose and popular delivery, &c.*] The author's illustration and application of this position in the remainder of the paragraph, might have well served as a reply to the tirade of Dean Wren against the Copernican system of astronomy, in his note at page 210, and has been used by some of the most eminent of our modern geologists, in attempting to shew that certain opinions, which they have deduced from geological phenomena, are only apparently and not really at variance with the Mosaic account of creation.

[5] *and it cannot be strange if.*] *Ed.* 1646 reads, "and I think it cannot be taken for heresy, if."

possible falsities, do notwithstanding include wholesome moralities, and such as expiate the trespass of their absurdities.

The hieroglyphical doctrine of the Egyptians (which in their four hundred years, cohabitation some conjecture they learned from the Hebrews) hath much advanced many popular conceits. For, using an alphabet of things, and not of words, through the image and pictures thereof they endeavoured to speak their hidden conceits in the letters and language of nature. In pursuit whereof, although in many things they exceeded not their true and real apprehensions, yet in some other they, either framing the story or taking up the tradition conducible unto their intentions, obliquely confirmed many falsities; which, as authentic and conceded truths, did after pass unto the Greeks, from them unto other nations, and are still retained by symbolical writers, emblematists, heralds, and others. Whereof some are strictly maintained for truths, as naturally making good their artificial representations; others, symbolically intended, are literally received, and swallowed in the first sense, without all gust of the second. Whereby we pervert the profound and mysterious knowledge of Egypt; containing the arcana of Greek antiquities, the key of many obscurities and ancient learning extant. Famous herein in former ages were Heraiscus, Cheremon, and Epius; especially Orus Apollo Niliacus, who lived in the reign of Theodosius, and in Egyptian language left two books of hieroglyphics, translated into Greek by Philippus, and a large collection of all made after by Pierius. But no man is likely to profound the ocean of that doctrine, beyond that eminent example of industrious learning, Kircherus.

Painters, who are the visible representers of things, and such as by the learned sense of the eye endeavour to inform the understanding, are not inculpable herein, who, either describing naturals as they are, or actions as they have been, have oftentimes erred in their delineations. Which, being the books that all can read, are fruitful advancers of these conceptions, especially in common and popular apprehensions, who, being unable for further enquiry, must rest in the draught and letter of their descriptions.

Lastly, poets and poetical writers have in this point exceeded others, trimly advancing the Egyptian notions[6] of harpies, phœnix, griffins, and many more. Now, however to make use of fictions, apologues, and fables be not unwarrantable, and the intent of these inventions might point at laudable ends, yet do they afford our junior capacities a frequent occasion of error, settling impressions in our tender memories which our advanced judgments generally neglect to expunge. This way the vain and idle fictions of the Gentiles did first insinuate into the heads of Christians, and thus are they continued even unto our days. Our first and literary apprehensions being commonly instructed in authors which handle nothing else, wherewith our memories being stuffed, our inventions become pedantic, and cannot avoid their allusions; driving at these as at the highest elegancies, which are but the frigidities of wit, and become not the genius of manly ingenuities. It were, therefore, no loss like that of Galen's library,[7] if these had found the same fate; and would in some way requite the neglect of solid authors, if they were less pursued. For, were a pregnant wit educated in ignorance hereof, receiving only impressions from realities, upon such solid foundations, it must surely raise more substantial superstructions, and fall upon very many excellent strains, which have been justled off by their intrusions.

CHAPTER X.

Of the last and great promoter of false opinions, the endeavours of Satan.

But, beside the infirmities of human nature, the seed of error within ourselves, and the several ways of delusion from each other, there is an invisible agent, the secret promoter

[6] *trimly advancing the Egyptian notions.*] "Leaving unto us the notions:" —*Ed.* 1646.

[7] *It were therefore no loss, &c.*] i. e. "had all such fabulous works been burnt, the loss would not have been comparable to that of Galen's library." He wrote 300 works, the greater part of which were burnt in the Temple of Peace, at Rome.

without us, whose activity is undiscerned, and plays in the dark upon us; and that is the first contriver of error, and professed opposer of truth, the devil. For though, permitted unto his proper principles, Adam, perhaps, would have sinned without the suggestion of Satan, and from the transgressive infirmities of himself might have erred alone, as well as the angels before him; and although were there no devil at all, yet there is now in our natures a confessed sufficiency unto corruption, and the frailty of our own economy were able to betray us out of truth; yet wants there not another agent, who taking advantage hereof proceedeth to obscure the diviner part, and efface all tract[8] of its traduction. To attempt a particular of all his wiles, is too bold an arithmetic for man: what most considerably concerneth his popular and practised ways of delusion, he first deceiveth mankind in five main points concerning God and himself.

And first, his endeavours have ever been, and they cease not yet, to instil a belief in the mind of man, there is no God at all. And this he principally endeavours to establish in a direct and literal apprehension; that is, that there is no such reality existent, that the necessity of his entity dependeth upon ours, and is but a political chimera; that the natural truth of God is an artificial erection of man, and the Creator himself but a subtile invention of the creature. Where he succeeds not thus high, he labours to introduce a secondary and deductive atheism; that although men concede there is a God, yet should they deny his providence. And therefore assertions have flown about, that he intendeth only the care of the species or common natures, but letteth loose the guard of individuals, and single existencies therein; that he looks not below the moon, but hath designed the regiment of sublunary affairs unto inferior deputations. To promote which apprehensions, or empuzzle their due conceptions, he casteth in the notions of fate, destiny, fortune, chance, and necessity; terms commonly misconceived by vulgar heads, and their propriety sometime perverted by the wisest. Whereby extinguishing in minds the compensation of virtue and vice, the hope and fear of heaven and hell, they comply in their

[8] *tract.*] In the sense of *track*. So used also by Shakespeare.

actions unto the drift of his delusions, and live like creatures below the capacity of either.

Now hereby he not only undermineth the base of religion, and destroyeth the principle preambulous unto all belief, but puts upon us the remotest error from truth. For atheism is the greatest falsity, and to affirm there is no God, the highest lie in nature. And therefore strictly taken, some men will say his labour is in vain; for many there are, who cannot conceive there was ever any absolute atheist, or such as could determine there was no God, without all check from himself, or contradiction from his other opinions. And therefore those few so called by elder times, might be the best of Pagans; suffering that name rather in relation to the gods of the Gentiles, than the true Creator of all. A conceit that cannot befall his greatest enemy, or him that would induce the same in us; who hath a sensible apprehension hereof, for he believeth with trembling. To speak yet more strictly and conformably unto some opinions, no creature can wish thus much; nor can the will which hath a power to run into velleities,[9] and wishes of impossibilities, have any *utinam* of this. For to desire there were no God, were plainly to unwish their own being, which must needs be annihilated in the subtraction of that essence which substantially supporteth them, and restrains them from regression into nothing. And if, as some contend, no creature can desire his own annihilation, that nothing is not appetible, and not to be at all, is worse than to be in the miserablest condition of something; the devil himself could not embrace that motion, nor would the enemy of God be freed by such a redemption.

But coldly thriving in this design, as being repulsed by the principles of humanity, and the dictates of that production which cannot deny its original, he fetcheth a wider circle; and when he cannot make men conceive there is no God at all, he endeavours to make them believe there is not one, but many: wherein he hath been so successful with common heads, that he hath led their belief through all the works of nature.

Now in this latter attempt, the subtilty of his circumvention hath indirectly obtained the former. For although to opinion

[9] *velleities.*] Velleity is the school term used to signify the lowest degree of desire.

there be many gods may seem an excess in religion, and such as cannot at all consist with atheism, yet doth it deductively and upon inference include the same; for unity is the inseparable and essential attribute of deity, and if there be more than one God, it is no atheism to say there is no God at all. And herein though Socrates only suffered, yet were Plato and Aristotle guilty of the same truth; who demonstratively understanding the simplicity of perfection, and the indivisible condition of the first causator, it was not in the power of earth, or areopagy* of hell to work them from it. For, holding an apodictical† knowledge and assured science of its verity, to persuade their apprehensions unto a plurality of gods in the world, were to make Euclid believe there were more than one centre in a circle, or one right angle in a triangle: which were indeed a fruitless attempt, and inferreth absurdities beyond the evasion of hell. For though mechanic and vulgar heads ascend not unto such comprehensions, who live not commonly unto half the advantage of their principles, yet did they not escape the eye of wiser Minervas, and such as made good the genealogy of Jupiter's brains; who, although they had divers styles for God, yet under many appellations acknowledged one divinity: rather conceiving thereby, the evidence or acts of his power in several ways and places, than a multiplication of essence, or real distraction of unity in any one.

Again, to render our errors more monstrous, (and what unto miracle sets forth the patience of God,) he hath endeavoured to make the world believe, that he was God himself; and failing of his first attempt to be but like the highest in heaven, he hath obtained with men to be the same on earth. And hath accordingly assumed the annexes of divinity, and the prerogatives of the Creator, drawing into practice the operation of miracles, and the prescience of things to come. Thus hath he in a specious way wrought cures upon the sick, played over the wondrous acts of prophets, and counterfeited many miracles of Christ and his apostles. Thus hath he openly contended with God, and to this effect his insolency was not ashamed to play a solemn

* Areopagus, the severe court of Athens. † Demonstrative.

prize with Moses; wherein, although his performance were very specious, and beyond the common apprehension of any power below a deity, yet was it not such as could make good his omnipotency. For he was wholly confounded in the conversion of dust into lice. An act philosophy can scarce deny to be above the power of nature, nor upon a requisite predisposition beyond the efficacy of the sun. Wherein notwithstanding, the head of the old serpent was confessedly too weak for Moses's hand, and the arm of his magicians too short for the finger of God.[1]

[1] *To play a solemn prize with Moses, &c.*] The following curious parallel to this passage, is contained in a fragment of a discourse on Acts vii, 22, which forms part of the "Remains" of the unfortunate H. Kirke White. The writer is inquiring into the nature of the "wisdom of the Egyptians," mentioned in his text; and after some remarks on the scientific knowledge of that people, he proceeds thus: "The great objects of attention were the occult sciences. It was the magicians who swayed the people with a power almost imperial. It was the magicians who spread their fame over all the civilized world, and attached a reverential awe to the name of an Egyptian. The mysteries of these arts the magi preserved with the most scrupulous care, they were imparted to none but their immediate descendants, they were not entrusted to writing, but were locked up in the breasts of their jealous possessors. There is reason to believe, that a portion of judicial astrology was mixed with their magic, but they seem to have relied more on the incantation of spirits for the accomplishment of their purposes. Who does not read the accounts contained in the book of Exodus, of the wonders they performed in emulation of Moses, with surprise and astonishment? This prompt re-duplication of the miracles wrought by the power of God, is such, as we cannot readily conceive to have been effected by art, or simulated by deception, and there remains no other possible mode of accounting for their power, than by presuming that they did really maintain that intercourse with fallen spirits to which they pretend. I am aware that sneers of vain philosophy will be directed against such a supposition, but the course of all history, sacred and profane, countenances the idea; and after the body of evidence afforded by the ancient writers on this point, to express unqualified and unhesitating disbelief, can only argue an utter ignorance of the grounds on which we can alone judge in this mysterious subject. Let any one, however, read with attention the history of the ancient world, and he will see strong reason for believing that a very great part of mankind was given up to the government of unclean spirits. He will find that their gods were rather devils, worse than the very worst of their followers; that their religious institutions were a compound of imposture, avarice, and the most abominable wickedness; yet he will find their oracles often true in their predictions, and maintaining for a long series of years the reputation of being inspired. It was thus in Egypt at the time of the Exodus; the spirits of darkness held uncontrolled dominion over the people through the medium of the magicians, and had arrived at such a pitch of audacity, as almost to fly in the face of Almighty God himself, and measure their powers with his. But we see in the Scripture how they were defeated. They could not follow the arm of the Lord in his wonders. They could not even save their unhappy votaries from his plagues, for "*the magicians could not stand before Moses, because of the boils, for the boil was with the magicians.*" That they knew the evil character of the spirits they served, and were aware of their subordination to the true Jehovah, is manifest from the confession extorted by the wonders wrought by Moses, when, unable to equal him in his miracles, they exclaimed to Pharoah, "*This is the finger of God.*" *Remains of Henry Kirke White*, vol. iii, p. 183—185. *Edit.* 1822.—*Br.*

Thus hath he also made men believe that he can raise the dead, that he hath the key of life and death, and a prerogative above that principle which makes no regression from privations.[2] The stoics, that opinioned the souls of wise men dwelt about the moon, and those of fools wandered about the earth, advantaged the conceit of this effect;[3] wherein the Epicureans, who held that death was nothing, nor nothing after death, must contradict their principles to be deceived. Nor could the Pythagorean or such as maintained the transmigration of souls give easy admittance hereto; for, holding that separated souls successively supplied other bodies, they could hardly allow the raising of souls from other worlds, which at the same time, they conceived conjoined unto bodies in this. More inconsistent with these opinions is the error of Christians, who holding the dead do rest in the Lord, do yet believe they are at the lure of the devil; that he who is in bonds himself commandeth the fetters of the dead, and dwelling in the bottomless lake, the blessed from Abraham's bosom; that can believe the real resurrection of Samuel; or that there is any thing but delusion in the practice of* necromancy and popular raising of ghosts.

He hath moreover endeavoured the opinion of deity, by the delusion of dreams, and the discovery of things to come in sleep, above the prescience of our waked senses. In this expectation he persuaded the credulity of elder times to take up their lodging before his temple, in skins of their own sacrifices, till his reservedness had contrived answers, whose accomplishments were in his power, or not beyond his presagement. Which way although it hath pleased Almighty God sometimes to reveal himself, yet was the proceeding very different. For the revelations of heaven are conveyed

* Divination by the dead.

[2] *that principle which makes no regression from privations.*] That *law* or principle, by which life once lost is irrecoverable. "The artist, who shall first recall to life a human being in a case of natural death, by the same resuscitative process which is applied to cases of violent death, becomes the founder of a new era, and of a new name in the annals of humanity, of medicine, and of science." *Whiter on the Disorder of Death, pref.* p. ix.

[3] *advantaged the conceit of this effect.*] Meaning that this opinion of the stoics somewhat facilitated the opinion that Satan can raise the dead, &c.

by new impressions, and the immediate illumination of the soul; whereas the deceiving spirit, by concitation of humours, produceth his conceited phantasm, or by compounding the species already residing, doth make up words which mentally speak his intentions.

But above all other he most advanced his deity in the solemn practice of oracles, wherein in several parts of the world he publicly professed his divinity; but how short they flew of that spirit, whose omniscience they would resemble, their weakness sufficiently declared. What juggling there was therein, the orator* plainly confessed, who being good at the same game himself, could say that Pythia Philippised. Who can but laugh at the carriage of Ammon unto Alexander, who addressing unto him as a God, was made to believe he was a God himself? How openly did he betray his indivinity unto Crœsus, who being ruined by his amphibology, and expostulating with him for so ungrateful a deceit, received no higher answer than the excuse of his impotency upon the contradiction of fate, and the settled law of powers beyond his power to control! What more than sublunary directions, or such as might proceed from the oracle of human reason, was in his advice unto the Spartans in the time of a great plague; when for the cessation thereof, he wished them to have recourse unto a fawn, that is, in open terms, unto one Nebrus,† a good physician of those days? From no diviner a spirit came his reply unto Caracalla, who requiring a remedy for his gout, received no other counsel than to refrain cold drink; which was but a dietetical caution, and such as without a journey unto Æsculapius, culinary prescription and kitchen aphorisms might have afforded at home. Nor surely if any truth there were therein, of more than natural activity was his counsel unto Democritus, when for the falling sickness he commended the maggot in a goat's head. For many things secret are true; sympathies and antipathies are safely authentic unto us, who ignorant of their causes may yet acknowledge their effects. Beside, being a natural magician he may perform many acts in ways above our knowledge, though not transcending our natural power, when our knowledge shall

* Demosthenes. † Nebros, in Greek, a fawn.

direct it. Part hereof hath been discovered by himself, and some by human indagation, which though magnified as fresh inventions unto us, are stale unto his cognition. I hardly believe he hath from elder times unknown the verticity of the loadstone; surely his perspicacity discerned it to respect the north, when ours beheld it indeterminately. Many secrets there are in nature of difficult discovery unto man, of easy knowledge unto Satan. Whereof some his vain glory cannot conceal, others his envy will not discover.

Again, such is the mystery of his delusion, that although he labour to make us believe that he is God, and supremest nature whatsoever, yet would he also persuade our beliefs that he is less than angels or men, and his condition not only subjected unto rational powers, but the action of things which have no efficacy on ourselves. Thus hath he inveigled no small part of the world into a credulity of artificial magic; that there is an art, which without compact commandeth the powers of hell; whence some have delivered the polity of spirits, and left an account even to their provincial dominions, that they stand in awe of charms, spells, and conjurations, that he is afraid of letters and characters, of notes and dashes, which, set together, do signifie nothing, not only in the dictionary of man, but the subtiler vocabulary of Satan. That there is any power in bitumen, pitch or brimstone, to purifie the air from his uncleanness, that any virtue there is in hypericon[4] to make good the name of *Fuga Dæmonis*,* any such magic as is ascribed unto the root *baaras* by Josephus, or *cynospastus* by Ælianus, it is not easy to believe, nor is it naturally made out what is delivered of Tobias, that by the fume of a fish's liver he put to flight Asmodeus. That they are afraid of the

* St. John's wort, so called by magicians.

[4] *Hypericon.*] This subject is thus alluded to by Stukeley, in his *Palæographia Sacra*, p. 16: "*Hypericon*, called 'fuga demonum', reckoned among sacred magical plants, on account of the Druids using them." The plant is the *Hypericum perforatum* of botanists, and will be found described and depicted in Somerby's *English Botany*, tab. 295. It was probably employed in the druidical rites, on account of its aromatic qualities, and of the flowers yielding a red essential oil; all plants having powerful effects upon the senses or upon the animal economy, being supposed, in former times, to possess mystical virtues, either in the way of propitiating good spirits or deities, or in that of charming away evil ones.—*Br.*

pentangle of Solomon,* [5] though so set forth with the body of man, as to touch and point out the five places wherein our Saviour was wounded, I know not how to assent. If, perhaps, he hath fled from holy water, if he cares not to hear the sound of Tetragrammaton,† if his eye delight not in the sign of the cross, and that sometimes he will seem to be charmed with words of holy scripture, and to fly from the letter and dead verbality, who must only start at the life and animated interiors thereof;—it may be feared they are but Parthian flights, ambuscado retreats, and elusory tergiversations; whereby to confirm our credulities, he will comply with the opinion of such powers, which in themselves have no activities. Whereof, having once begot in our minds an assured dependence, he makes us rely on powers which he but precariously obeys, and to desert those true and only charms which hell cannot withstand.

Lastly, to lead us farther into darkness, and quite to lose us in this maze of error, he would make men believe there is no such creature as himself, and that he is not only subject unto inferior creatures, but in the rank of nothing,—insinuating into men's minds there is no devil at all; and contriveth, accordingly, many ways to conceal or indubitate [6] his existency. Wherein, beside that he annihilates the blessed angels and spirits in the rank of his creation, he begets a security of himself, and a careless eye unto the last remunerations. And, therefore, hereto he inveigleth, not only Sadducees and such as retain unto the church of God, but is also content that Epicurus, Democritus, or any heathen should hold the same. And to this effect he maketh men believe that apparitions, and such as confirm his existence, are either deceptions of

* Three triangles intersected and made of five lines.
† Implying Jehovah, which in Hebrew consisteth of four letters.

[5] *Pentangle of Solomon.*] After the unexpected discovery of the treasure in Misticot's grave, by Sir Arthur Wardour and his friends, in "The Antiquary," the writer introduces into Oldbuck's attack upon the German adept, Douster-swivel, on the latter pretending that the discovery had been effected by means of his magical arts, the following allusion to the pentangle:—"You have used neither charm, lamen, sigil, talisman, spell, crystal, *pentacle*, magic mirror, nor geomantic figure." *The Antiquary*, edit. with author's notes, vol. ii, p. 32.—*Br.*

[6] *indubitate.*] To bring into doubt; for in English the adjective signifies doubtless.—*Wr.*

sight, or melancholy depravements of fancy. Thus when he had not only appeared but spake unto Brutus; Cassius, the Epicurean, was ready at hand to persuade him it was but a mistake in his weary imagination, and that indeed there were no such realities in nature. Thus he endeavours to propagate the unbelief of witches, whose concessions infers his coexistency; by this means also he advanceth the opinion of total death, and staggereth the immortality of the soul; for, such as deny there are spirits subsistent without bodies, will with more difficulty affirm the separated existence of their own.[7]

Now, to induce and bring about these falsities, he hath laboured to destroy the evidence of truth, that is, the revealed verity and written word of God. To which intent he hath obtained with some to repudiate the books of Moses, others those of the prophets, and some both; to deny the gospel and authentic histories of Christ; to reject that of John, and to receive that of Judas; to disallow all, and erect another of Thomas.[8] And when neither their corruption by Valentinus and Arrius, their mutilation by Marcion, Manes,

[7] *Lastly, &c.*] Most certainly the Devil would have work enough on his hands, if he were concerned in all the mischief, real and imaginary, which has been attributed to him by many great men, and, among others, by our author. As an admirer of Browne, I cannot but regret most deeply the share which his views of Satanic influence led him to take in the trial of Amy Duny and Rose Cullendon, who were condemned and executed as witches, in 1664, at Bury, before one of the greatest and best men of his time, Sir Matthew Hale.—But, on the other hand, although we attribute to popular superstition the belief in *modern* witchcraft, and although it be conceded to the research and ingenuity of recent very eminent physiologists, that many of the best attested cases of apparitions were spectral illusions, attributable to physical causes,—we must not hence be supposed to doubt the existence and active agency of the Devil;—nor to question the *scriptural* relation of witches, and spiritual appearances. I am by no means inclined to admit that apparitions "confirm the existence of the Devil;" but I feel no greater difficulty in believing that such spiritual manifestations *may* still be occasionally permitted to take place, than in admitting that spiritual existence is not subject to the same laws as those which govern material existence. The spirit, at death, leaves the body *permanently* no more to resume its tenement on earth; why then should not a *transient* separation during life take place, and the spirit —bound by no laws of time and space —pay its monitory visit to some distant friend? See *Hibbert's Philosophy of Apparitions; Alderson's Essay on Apparitions; Ross*, p. 72, § 6.

[8] *to receive that of Judas; &c.*] In *Fabricii Codex Apocryphus* and in *Jones's Method of settling the Canonical authority of the New Testament*, accounts are to be found of these Apocryphal gospels. There were two under the name of *Judas*; one of Judas Iscariot, and the other of Judas Thaddeus, but they are not now extant. Of the gospel of Thomas, some fragments yet remain, under the name of "the gospel of our Saviour's infancy."

and Ebion, could satisfy his design, he attempted the ruin and total destruction thereof; as he sedulously endeavoured, by the power and subtilty of Julian, Maximinus, and Dioclesian.

But the longevity of that piece, which hath so long escaped the common fate, and the providence of that spirit which ever waketh over it, may at last discourage such attempts, and if not make doubtful its mortality, at least, indubitably declare this is a stone too big for Satan's mouth, and a bit indeed oblivion cannot swallow.

And thus how strangely he possesseth us with errors may clearly be observed, deluding us into contradictory and inconsistent falsities; whilst he would make us believe,—That there is no God—that there are many—that he himself is God—that he is less than angels or men—that he is nothing at all.

Nor hath he only by these wiles depraved the conception of the Creator, but with such riddles hath also entangled the nature of our Redeemer.[9] Some denying his humanity, and that he was one of the angels, as Ebion; that the Father and Son were but one person, as Sabellius. That his body was phantastical, as Manes, Basilides, Priscillian, Jovinianus; that he only passed through Mary, as Eutyches and Valentinus. Some denying his divinity; that he was begotten of human principles, and the seminal son of Joseph, as Carpocras, Symmachus, Photinus: that he was Seth, the son of Adam, as the Sethians; that he was less than angels, as Cerinthus; that he was inferior unto Melchisedec, as Theodotus; that he was not God, but God dwelt in him, as Nicolaus; and some embroiling them both. So did they which converted the trinity into a quaternity, and affirmed two persons in Christ, as Paulus Samosatenus; that held he was a man without a soul, and that the word performed that office in him, as Apollinaris; that he was both Son and Father, as Montanus; that Jesus suffered, but Christ remained impatible, as Cherinthus. Thus he endeavours to entangle truth; and, when he cannot possibly destroy its substance,

[9] *nature of our Redeemer.*] The doctrines of the Heresiarchs enumerated in this paragraph, are, upon the whole, accurately stated by our author: detailed views of most of them will be found in Mosheim's *Ecclesiastical History.—Br.*

he cunningly confounds its apprehensions—that from the inconsistent and contrary determinations thereof, consectary impieties[1] and hopeful conclusions may arise, there's no such thing at all.

CHAPTER XI.

A further Illustration of the same.

Now, although these ways of delusion most Christians have escaped, yet are there many other whereunto we are daily betrayed; and these we meet with in obvious occurrents of the world,[2] wherein he induceth us to ascribe effects unto causes of no cognation;[3] and, distorting the order and theory of causes perpendicular to their effects, he draws them aside unto things whereto they run parallel, and in their proper motions would never meet together.

Thus doth he sometime delude us in the conceits of stars and meteors, beside their allowable actions ascribing effects thereunto of independent causations. Thus hath he also made the ignorant sort believe that natural effects immediately and commonly proceed from supernatural powers: and these he usually derives from Heaven, and his own principality the air, and meteors therein; which, being of themselves the effects of natural and created causes, and such as, upon a due conjunction of actives and passives, without a miracle, must arise unto what they appear, are always looked on by ignorant spectators as supernatural spectacles, and made the causes or signs of most succeeding contingencies. To behold a rainbow in the night, is no prodigy unto a philosopher. Than eclipses of sun or moon, nothing is more natural: yet with what superstition they have been beheld since the tragedy of Nicias and his army,[4] many examples declare.

[1] *consectary impieties.*] "Consequent impieties."

[2] *occurrents of the world.*] "Occurrences of the world."

[3] *of no cognation.*] "Of no *relation.*"

[4] *Nicias and his army.*] He lost his army before Syracuse, by delaying to embark it, at the favourable moment, on account of an eclipse of the moon which suddenly came on. *Plutarch in Vit.*

True it is, and we will not deny it, that although, these being natural productions from second and settled causes, we need not alway look upon them as the immediate hand of God, or of his ministering spirits: yet do they sometimes admit a respect therein; and, even in their naturals, the indifferency of their existences, contemporised unto our actions, admits a farther consideration.

That two or three suns or moons appear in any man's life or reign, it is not worth the wonder. But that the same should fall out at a remarkable time, or point of some decisive action; that the contingency of its appearance should be confirmed unto that time; that those two should make but one line in the book of fate, and stand together in the great ephemerides of God; beside the philosophical assignment of the cause, it may admit a Christian apprehension in the signality.

But, above all he deceiveth us, when we ascribe the effects of things unto evident and seeming casualties, which arise from the secret and undiscerned action of himself. Thus hath he deluded many nations in his augurial and extispicious[5] inventions, from casual and uncontrived contingencies divining events succeeding. Which Tuscan superstition seizing upon Rome, hath since possessed all Europe. When Augustus found two galls in his sacrifice, the credulity of the city concluded a hope of peace with Anthony, and the conjunction of persons in choler with each other. Because Brutus and Cassius met a blackmoor, and Pompey had on a dark or sad-coloured garment at Pharsalia; these were presages of their overthrow.[6] Which notwithstanding are scarce rhetorical sequels; concluding metaphors from realities, and from conceptions metaphorical inferring realities again.

Now these divinations concerning events, being in his power to force, contrive, prevent, or further, they must generally fall out conformably unto his predictions. When Gracchus was slain, the same day the chickens refused to come out of

[5] *extispicious.*] "Relating to the inspection of entrails in order to prognostication."

[6] *Because Brutus and Cassius met a blackmoor.*] The Ethiopian, who met the standard-bearer opening the gate of the camp, and was cut in pieces by the soldiers, as affording an ill omen.

the coop; and Claudius Pulcher underwent the like success, when he condemned the tripudiary augurations; they died, not because the pullets would not feed, but, because the devil foresaw[7] their death, he contrived that abstinence in them. So was there no natural dependence of the event upon the sign, but an artificial contrivance of the sign unto the event. An unexpected way of delusion, and whereby he more easily led away the incircumspection of their belief. Which fallacy he might excellently have acted before the death of Saul; for that being within his power to foretell, was not beyond his ability to foreshew, and might have contrived signs thereof through all the creatures, which, visibly confirmed by the event, had proved authentic unto those times, and advanced the art ever after.

He deludeth us also by philters, ligatures, charms, ungrounded amulets, characters, and many superstitious ways in the cure of common diseases: seconding herein the expectation of men with events of his own contriving, which while some, unwilling to fall directly upon magick, impute unto the power of imagination, or the efficacy of hidden causes, he obtains a bloody advantage; for thereby he begets not only a false opinion, but such as leadeth the open way to destruction. In maladies admitting natural reliefs, making men rely on remedies, neither of real operation in themselves, nor more than seeming efficacy in his concurrence. Which whensoever he pleaseth to withdraw, they stand naked unto the mischief of their diseases, and revenge the contempt of the medicines of the earth which God hath created for them. And therefore, when neither miracle is expected, nor connection of cause unto effect from natural grounds concluded, however it be sometime successful, it cannot be safe to rely on such practices, and desert the known and authentic provisions of God. In which rank of remedies, if nothing in our knowledge or their proper power be able to relieve us, we must with patience submit unto that restraint, and expect the will of the restrainer.

[7] *The devil foresaw, &c.*] "Because he foresaw the death of Gracchus and Claudius Pulcher, he contrived that abstinence in the birds."

Now in these effects although he seem ofttimes to imitate, yet doth he concur unto their productions in a different way from that spirit which sometimes, in natural means, produceth effects above nature. For whether he worketh by causes which have relation or none unto the effect, he maketh it out by secret and undiscerned ways of nature. So, when Caius the blind, in the reign of Antoninus, was commanded to pass from the right side of the altar unto the left, to lay five fingers of one hand thereon, and five of the other upon his eyes; although the cure succeeded, and all the people wondered, there was not any thing in the action which did produce it, nor any thing in his power that could enable it thereunto. So for the same infirmity, when Aper was counselled by him to make a collyrium or ocular medicine with the blood of a white cock and honey, and apply it to his eyes for three days; when Julian for his spitting of blood, was cured by honey and pine nuts taken from his altar; when Lucius for the pain in his side, applied thereto the ashes from his altar with wine; although the remedies were somewhat rational, and not without a natural virtue unto such intentions, yet need we not believe that by their proper faculties they produced these effects.

But the effects of powers divine flow from another operation; who, either proceeding by visible means or not unto visible effects, is able to conjoin them by his co-operation. And therefore those sensible ways which seem of indifferent natures, are not idle ceremonies, but may be causes by his command, and arise unto productions beyond their regular activities. If Naaman the Syrian had washed in Jordan without the command of the prophet, I believe he had been cleansed by them no more than by the waters of Damascus. I doubt, if any beside Elisha had cast in salt, the waters of Jericho had not been made wholesome. I know that a decoction of wild gourd or *colocynthis* (though somewhat qualified) will not from every hand be dulcified unto aliment by an addition of flour or meal. There was some natural virtue in the plaster of figs applied unto Hezechiah; we find that gall is very mundificative, and was a proper medicine to clear the eyes of Tobit; which carrying in themselves some action

of their own, they were additionally promoted by that power, which can extend their natures unto the production of effects beyond their created efficiencies. And thus may he operate also from causes of no power unto their visible effects; for he that hath determined their actions unto certain effects, hath not so emptied his own, but that he can make them effectual unto any other.

Again, although his delusions run highest in points of practice, whose errors draw on offensive or penal enormities, yet doth he also deal in points of speculation, and things whose knowledge terminates in themselves. Whose cognition although it seems indifferent, and therefore its aberration directly to condemn no man, yet doth he hereby preparatively dispose us unto errors, and deductively deject us into destructive conclusions.

That the sun, moon, and stars, are living creatures, endued with soul and life, seems an innocent error, and an harmless digression from truth; yet hereby he confirmed their idolatry, and made it more plausibly embraced. For, wisely mistrusting that reasonable spirits would never firmly be lost in the adorement of things inanimate, and in the lowest form of nature, he begat an opinion that they were living creatures, and could not decay for ever.

That spirits are corporeal, seems at first view a conceit derogative unto himself, and such as he should rather labour to overthrow; yet hereby he establisheth the doctrine of lustrations, amulets, and charms, as we have declared before.

That there are two principles of all things, one good and another evil; from the one proceeding virtue, love, light, and unity; from the other, division, discord, darkness, and deformity, was the speculation of Pythagoras, Empedocles, and many ancient philosophers, and was no more than Oromasdes and Arimanius of Zoroaster.[8] Yet hereby he obtained the advantage of adoration, and as the terrible principle became more dreadful than his Maker, and therefore not willing to let it fall, he furthered the conceit in succeeding ages, and raised the faction of Manes to maintain it.

[8] *Oromasdes and Arimanius of Zoroaster.*] These were the two deities of Zoroaster, the founder of the Magi in Persia.—*Wr.*

That the feminine sex have no generative emission, affording no seminal principles of conception, was Aristotle's opinion of old, maintained still by some, and will be countenanced by him[9] for ever. For hereby he disparageth the fruit of the Virgin, frustrateth the fundamental prophecy, nor can the seed of the woman then break the head of the serpent.

Nor doth he only sport in speculative errors, which are of consequent impieties, but the unquietness of his malice haunts after simple lapses, and such whose falsities do only condemn our understandings. Thus if Xenophanes will say there is another world in the moon;[1] if Heraclitus, with his adherents, will hold the sun is no bigger than it appeareth; if Anaxagoras affirm that snow is black; if any other opinion there are no Antipodes, or that stars do fall, he shall not want herein the applause or advocacy of Satan. For maligning the tranquillity of truth, he delighteth to trouble its streams; and, being a professed enemy unto God (who is truth itself) he promoteth any error as derogatory to his nature, and revengeth himself in every deformity from truth. If, therefore, at any time he speak or practise truth, it is upon design, and a subtle inversion of the precept of God, to do good that evil may come of it. And, therefore, sometime we meet with wholesome doctrines from hell; *Nosce teipsum*, the motto of Delphos, was a good precept in morality; that a just man is beloved of the gods, an uncontrollable verity. 'Twas a good deed, though not well done, which he wrought by Vespasian, when by the touch of his foot he restored a lame man, and by the stroke of his hand another that was blind, but the intention hereof drived at his own advantage; for hereby he not only confirmed the opinion of his power with the people, but his integrity with princes, in whose

[9] *by him.*] That is, by the devil.

[1] *if* Xenophanes *will say there is another world in the moon.*] Xenophanes was a pantheistical philosopher, born at Colophon, B. C. 556, who founded the Eleatic sect in Sicily, and died in Magna Græcia at the age of a century, having occupied the Pythagorean chair of philosophy for nearly seventy years. His doctrines, both philosophical and astronomical, if they have been rightly represented, were wild and incongruous; but perhaps it may be inferred, from the reasonableness of his tenet that *the moon was an inhabited world*, that, as suspected by Brucker and others, they have been misrepresented. This is of course the notion alluded to by our author. See *Bruckeri Hist. Crit. Philosophiæ*, tom. i, p. 1143, 1148, 1155.—*Br.*

power he knew it lay to overthrow his oracles, and silence the practice of his delusions.

But of such a diffused nature, and so large is the empire of truth, that it hath place within the walls of hell, and the devils themselves are daily forced to practise it; not only as being true themselves, in a metaphysical verity, that is, as having their essence conformable unto the intellect of their maker, but making use of moral and logical verities, that is, whether in the conformity of words unto things, or things unto their own conceptions, they practise truth in common among themselves. For, although without speech they intuitively conceive each other, yet do their apprehensions proceed through realities; and they conceive each other by species, which carry the true and proper notions of things conceived. And so also in moral verities, although they deceive us, they lie not unto each other, as well understanding, that all community is continued by truth, and that of hell cannot consist without it.

To come yet nearer the point, and draw into a sharper angle: they do not only speak and practise truth, but may be said well-wishers hereunto, and, in some sense, do really desire its enlargement. For many things which in themselves are false, they do desire were true. He cannot but wish he were as he professeth, that he had the knowledge of future events; were it in his power, the Jews should be in the right, and the Messias yet to come. Could his desires effect it, the opinion of Aristotle should be true, the world should have no end,[2] but be as immortal as himself. For thereby he might evade the accomplishment of those afflictions he now but gradually endureth; for comparatively unto those flames, he is but in *balneo*, then begins his *ignis rotæ*,[3]

[2] *the world should have no end.*] Aristotle unquestionably held this doctrine, as appears from the entire argument of his treatise *On the Heavens.*—*Br.*

[3] *he is but yet in* balneo, *then begins his* ignis rotæ.] These terms are derived from the technical language of the old chemists. *In balneo* refers to the gentle or comparatively low heat obtained by immersing the vessel containing the substance to be heated in a *bath* of heated water, oil, sand, or other convenient medium; whence the *water bath* and *sand bath*, or sand heat of modern chemistry. The *ignis rotæ* was a naked fire disposed in a circle round a crucible, in which ignition or calcination, operations requiring an intense heat were to be performed. Thus understood, the meaning of our author's application of these terms is obvious.—*Br.*

and terrible fire, which will determine his disputed subtilty, and even hazard his immortality.

But to speak strictly, he is in these wishes no promoter of verity, but, if considered, some ways injurious unto truth; for (besides that if things were true, which now are false, it were but an exchange of their natures, and things must then be false, which now are true) the settled and determined order of the world would be perverted, and that course of things disturbed which seemed best unto the immutable contriver. For, whilst they murmur against the present disposure of things, regulating determined realities unto their private optations, they rest not in their established natures, but unwishing their unalterable verities, do tacitly desire in them a difformity from the primitive rule, and the idea of that mind that formed all things best. And thus he offendeth truth even in his first attempt; for, not content with his created nature, and thinking it too low to be the highest creature of God, he offended the ordainer, not only in the attempt, but in the wish and simple volition thereof.

THE SECOND BOOK,

BEGINNING THE PARTICULAR PART.

OF POPULAR AND RECEIVED TENETS CONCERNING MINERAL AND VEGETABLE BODIES.

CHAPTER I.

That Crystal is nothing else but Ice strongly congealed.

HEREOF the common opinion hath been, and still remaineth amongst us, that crystal is nothing else but ice or snow concreted, and, by duration of time, congealed beyond liquation. Of which assertion, if prescription of time, and numerosity of assertors were a sufficient demonstration, we might sit down herein, as an unquestionable truth, nor should there need ulterior disquisition; for few opinions there are which have found so many friends, or been so popularly received, through all professions and ages. Pliny is positive in this opinion; *Crystallus fit gelu vehementius concreto:*[1] the same is followed by Seneca, elegantly described by Claudian, not denied by Scaliger, some way affirmed by Albertus, Brassavolus, and directly by many others.[2] The venerable fathers of the church have also assented hereto; as Basil, in his *Hexameron*, Isidore, in his *Etymologies*, and not only Austin, a Latine father, but Gregory the Great, and Jerom upon occasion of that term expressed in the first of Ezekiel.

[1] *Crystallus fit gelu, &c.*] This opinion is given by Pliny, *Hist. Nat.* lib. xxxvii, cap. 2.—*Bp.*

[2] *by many others.*] Thucydides clearly uses the word κρύσταλλος in the sense of *ice*; See *Hist.* iii, 23.—4to. vol. 1, p. 438.

All which notwithstanding, upon a strict enquiry, we find the matter controvertible, and with much more reason denied, than is as yet affirmed. For though many have passed it over with easy affirmatives, yet there are also many authors that deny it, and the exactest mineralogists have rejected it. Diodorus, in his eleventh book, denieth it, (if crystal be there taken in its proper acception, as Rhodiginus hath used it, and not for a diamond, as Salmasius hath expounded it), for in that place he affirmeth, *crystallum esse lapidem ex aqua pura concretum, non tamen frigore sed divini caloris vi.* Solinus, who transcribed Pliny, and, therefore, in almost all subscribed unto him, hath in this point dissented from him. *Putant quidam glaciem coire, et in crystallum corporari, sed frustra.* Matthiolus, in his comment upon Dioscorides, hath with confidence rejected it.[3] The same hath been performed by Agricola, *De natura fossilium,* by Cardan, Boëtius de Boot, Cæsius Bernardus, Sennertus, and many more.

Now, besides authority against it, there may be many reasons, deduced from their several differences, which seem to overthrow it. And first a difference is probably in their concretion. For, if crystal be a stone, (as in the number thereof it is confessedly received,)[4] it is not immediately concreted by the efficacy of cold, but rather by a mineral spirit and lapidifical principles of its own; and, therefore, while it lay *in solutis principiis,* and remained in a fluid body, it was a subject very unapt for proper conglaciation; for mineral spirits do generally resist, and scarce submit thereto. So we observe that many waters and springs will never freeze, and many parts in rivers and lakes, where there are mineral eruptions, will still persist without congelation; as we also observe in aqua fortis, or any mineral solution, either of vitriol, alum, saltpetre, ammoniac, or tartar, which, although to some degree

[3] *with confidence rejected it.*] "With confidence, and not without reason, rejected it."—*Ed.* 1646.

[4] *as in the number thereof it is,* &c.] i. e. in the number whereof it is, &c. Ross, with his usual wrong-headedness, argues stoutly for the ancient opinion. "The cold of some waters," he observes, "metamorphose sticks, leaves, and trees, pieces of leather, nutshells, and such like stuff into stones; why then may not cold convert ice into a higher degree of hardness, and prepare it for reception of a new form, which gives it the essence and name of crystal."—*Arcana,* p. 189.

exhaled, and placed in cold conservatories, will crystallize and shoot into white and glacious bodies; yet is not this a congelation primarily effected by cold, but an intrinsical induration from themselves; and a retreat into their proper solidities, which were absorbed by the liquor, and lost in a full imbibition thereof before. And so, also, when wood and many other bodies do petrify, either by the sea, other waters, or earths abounding in such spirits, we do not usually ascribe their induration to cold, but rather unto salinous spirits, concretive juices, and causes circumjacent, which do assimilate all bodies not indisposed for their impressions.

But ice is only water congealed by the frigidity of the air, whereby it acquireth no new form, but rather a consistence or determination of its diffluency, and amitteth not its essence, but condition of fluidity. Neither doth there any thing properly conglaciate but water, or watery humidity; for the determination of quicksilver is properly fixation, that of milk coagulation, and that of oil and unctious bodies only incrassation. And, therefore, Aristotle makes a trial of the fertility of human seed, from the experiment of congelation; for that, saith he, which is not watery and improlifical will not conglaciate: which, perhaps, must not be taken strictly, but in the germ and spirited particles; for eggs, I observe, will freeze in the albugineous part[5] thereof. And upon this ground Paracelsus, in his *Archidoxis*, extracteth the magistery of wine; after four months' digestion in horse-dung, exposing it unto the extremity of cold, whereby the aqueous parts will freeze, but the spirit retire, and be found uncongealed in the centre.

But whether this congelation be simply made by cold, or also by co-operation of any nitrous coagulum, or spirit of salt, the principle of concretion, whereby we observe that ice may be made with salt and snow by the fire side, as is also observable from ice made by saltpetre and water, duly mixed and strongly agitated, at any time of the year, were a very considerable enquiry. For thereby we might clear the gene-

[5] *eggs, I observe, &c.*] That point in the *Chalaza*, the spark of vivification, I wish it might freeze: it would rid my trees from caterpillars, which can continue their noxious species, by their hybernating eggs.—*Robinson's Endoxa.*

ration of snow, hail, and hoary frosts, the piercing qualities of some winds, the coldness of caverns, and some cells. We might more sensibly conceive how saltpetre fixeth the flying spirits of minerals in chemical preparations, and how by this congealing quality it becomes an useful medicine in fevers.[6]

Again, the difference of their concretion is collectible from their dissolution, which being many ways performable in ice, is few ways effected[7] in crystal. Now the causes of liquation are contrary to those of concretion; and, as the atoms and indivisible parcels are united, so are they in an opposite way disjoined. That which is concreted by exsiccation or expression of humidity,[8] will be resolved by humectation, as earth, dirt, and clay; that which is coagulated by a fiery siccity, will suffer colliquation from an aqueous humidity, as salt and sugar, which are easily dissoluble in water, but not without difficulty in oil and well rectified spirits of wine. That which is concreted by cold, will dissolve by a moist heat, if it consist of watery parts, as gums arabic, tragacanth, ammoniac, and others, in an airy heat or oil, as all resinous bodies, turpentine, pitch, and frankincense; in both, as gummy resinous bodies, mastic, camphor, and storax; in neither, as neutrals, and bodies anomalous hereto, as bdellium, myrrh, and others. Some by a violent dry heat, as metals; which although corrodible by waters, yet will they not suffer a liquation from the powerfullest heat communicable unto that element. Some will dissolve by this heat, although their ingredients be earthy, as glass,[9] whose materials are fine sand, and the ashes of kali or fern; and so will salt run with fire, although it be concreted by heat. And this way may be effected a liquation in crystal, but not without some difficulty, that is, calcination or reducing it by art into a subtle powder, by which way and a vitreous commixture, glasses are sometime made hereof, and it becomes the

[6] *But whether, &c.*] This paragraph was added in *Second Edition.*

[7] *is few ways effected.*] "Is not in the same manner effected."—*Ed.* 1646.

[8] *that which is concreted by exsiccation, &c.*] The statements here made by our author respecting the causes of liquation and concretion, &c. are evidently derived from Aristotle, *Met.* lib. iv, cap. 6. See also the notes to *Pseudodoxia*, book i, chap. vi, p. 216.—*Br.*

[9] *glass.*] In the *Manchester Memoirs*, vol. 2, p. 95, there are some interesting "Remarks on the Knowledge of the Ancients respecting Glass," by Dr. Falconer.

chiefest ground for artificial and factitious gems. But the same way of solution is common also unto many stones; and not only beryls and cornelians, but flints and pebbles are subject unto fusion, and will run like glass in fire.

But ice will dissolve in any way of heat, for it will dissolve with fire, it will colliquate in water, or warm oil, nor doth it only submit unto an actual heat, but not endure the potential calidity of many waters. For it will presently dissolve in cold aqua fortis, spirit of vitriol, salt or tartar, nor will it long continue its fixation in spirits of wine, as may be observed in ice injected therein.

Again, the concretion of ice will not endure a dry attrition without liquation; for if it be rubbed long with a cloth, it melteth. But crystal will calefy unto electricity, that is, a power to attract straws or light bodies, and convert the needle freely placed:—which is a declarement of very different parts, wherein we shall not enlarge, as having discoursed concerning such bodies in the chap. of electrics.

They are differenced by supernatation or floating upon water;[1] for crystal will sink in water, as carrying in its own bulk a greater ponderosity than the space in any water it doth occupy, and will therefore only swim in molten metal and quicksilver. But ice will swim in water of what thinness soever; and, though it sink in oil, will float in spirits of wine or aqua vitæ. And therefore it may swim in water, not only as being water itself, and in its proper place, but perhaps as weighing somewhat less[2] than the water it possesseth. And therefore, as it will not sink unto the bottom, so neither will it float above, like lighter bodies, but, being near in weight, lie superficially or almost horizontally unto it. And therefore also, an ice or congelation of salt or sugar, although it descend not unto the bottom, yet will it abate, and decline below

[1] *They are differenced, &c.*] They; i. e. ice and crystal. Here again we have Ross's ingenious reply;—"It's no wonder to see a stone sink and ice swim; for crystal when it was ice, swimmed, being now a stone sinks; as being a body more compact, hard, solid, and ponderous; so a stick will swim, but when it is converted to a stone, it sinks. The argument therefore is good thus; crystal sinks, ice swims; therefore crystal *is* not ice; but it will not follow, therefore, crystal *was* not ice."—*Arcana*, p. 189.

[2] *somewhat less.*] "No more."—*Ed.* 1646. The specific gravity of ice is to that of water, as 8 to 9. Its greater lightness was discovered by Galileo.

the surface in thin water, but very sensibly in spirits of wine. For ice, although it seemeth as transparent and compact as crystal, yet is it short in either;[3] for its atoms are not concreted into continuity, which doth diminish its translucency; it is also full of spumes and bubbles, which may abate its gravity. And therefore, waters frozen in pans and open glasses, after their dissolution, do commonly leave a froth and spume upon them, which are caused by the airy parts diffused in the congelable mixture, which, uniting themselves, and finding no passage at the surface, do elevate the mass, and make the liquor take up a greater place than before: as may be observed in glasses filled with water, which, being frozen will seem to swell above the brim. So that if, in this condensation, any one affirmeth there is also some rarefaction, experience may assert it.[4]

They are distinguished, in substance of parts, and the accidents thereof:[5] that is, in colour and figure: for ice is a similary body, and homogeneous concretion, whose material is properly water, and but accidentally exceeding the simplicity of that element. But the body of crystal is mixed, its ingredients many, and sensibly containeth those principles into which mixed bodies are reduced. For beside the spirit and mercurial principle, it containeth a sulphur or inflammable part, and that in no small quantity; for, besides its electric attraction, which is made by a sulphureous effluvium, it will strike fire upon percussion, like many other stones, and, upon collision with steel, actively send forth its sparks, not much inferiorly unto a flint. Now, such bodies as strike fire, as have sulphureous or ignitable parts within them, and those strike best which abound most in them. For these scintillations are not the accension of the air, upon the collision of two hard bodies, but rather the inflammable effluencies or vitrified sparks discharged from the bodies collided. For diamonds, marbles, heliotropes, and agaths, though hard

[3] *yet is it short in either.*] "Yet is it inferior to crystal, both in transparency and compactness."

[4] *which are, &c.*] From l. 8. to the end of the paragraph was added in *2nd Edit.*

[5] *They are distinguished, &c.*] Ross again meets the author on the hypothesis, that no present difference between ice and crystal can prove that the one may never have been the other. "Crystal is not so much distinguished either in substance or accidents from ice, as a chick is from an egg, and yet the chick was an egg."—*Arcana*, 190.

bodies will not readily strike fire with a steel, much less with one another. Nor a flint so readily with a steel if they both be very wet, for then the sparks are sometimes quenched in their eruption.[6]

[6] *Now such bodies strike fire, as have &c.*] The scientific reader might at first infer, from the perusal of this passage, that, as the *Pseudodoxia* was first published in 1646, our author had anticipated the celebrated Hooke in his experimental investigation of the nature of the sparks produced by the collision of flint and steel. A comparison, however, of the passage as it stands in the edition of 1672, (the last revised by the author,) with the corresponding one in all the previous editions, and a reference to a further allusion to the subject in book iii, will show that Browne's statements on the subject were corrected and matured subsequently to the promulgation of Hooke's results, and that all his definite knowledge respecting it was borrowed from the latter, as, indeed, he has fairly, though indirectly, acknowledged. As the present annotator at first made the above inference himself, and (the subject being of some importance in the history of science) was induced to examine the seeming anticipation somewhat minutely, it may be as well to introduce here the entire examination; this, while it proves that Browne's knowledge on the point was derived from Hooke, as just stated, will evince also the diligence with which he investigated, and the candour with which he adopted the discoveries of his contemporaries.

It will first be proper to cite the statement of Dr. Hooke:—He informs us in his *Micrographia*, (published in 1665,) p. 44—46, that, about eight years before, he came, from experiment, to the following conclusions: that a spark struck from a flint and steel was nothing else but a small piece of the steel or flint, but most commonly of the steel, which, by the violence of the stroke, is at the same time severed and heated red-hot, and that sometimes to such a degree, as to make it melt into a small globule of steel, and sometimes further to vitrify it; phenomena which he ascribes to the existence in iron or steel of a very combustible sulphureous body "which the air very readily preys upon, as soon as the body is a little violently heated." That such is truly the nature of such sparks he proves by experiment and by microscopical observation; and if we regard his supposition of the combustible sulphureous body in steel as merely another mode of describing the combustible nature of the metal, his explanation is perfectly correct, and in accordance with the results of modern chemical discovery: the oxygen in the air "preys upon" the metal, when heated by the percussion which separates it from the mass, converts it into an oxide, which the heat is also often sufficiently intense to vitrify.

In book iii, chap. xxi, of the *Pseudodoxia*, editions 1672 and 1686, we find the following recurrence to the collision of flint and steel, introduced in the discussion of another subject: "As first, how fire is stricken out of flints? That is, not by kindling the air from the collision of two hard bodies; for then diamonds should do the like better than flints; but rather from sulphureous, inflamed, and even *vitrified effluviums* and *particles*, as hath been observed of late." —(1672, p. 176; 1686, p. 124). Upon comparing these two passages from the editions of 1672 and 1686 with the corresponding passages in earlier editions, we find the following differences with respect to the point now before us. Book ii, chap. i: the words, "or vitrified sparks," do not occur in the earlier editions. Book iii, chap. xxi: instead of the words, "but rather from sulphureous, &c.," as above, to the end of the extract, in the editions of 1672 and 1686, we have in the earlier editions only these: "but rather from the sulphur and inflammable effluviums contained in them."

It is clear, therefore, that the *Micrographia* of Hooke having appeared in the interval between the publication of the first and that of the sixth edition of the *Pseudodoxia*, our author had perused the work of his great contemporary, and interwoven the results of his experimental investigation of the phenomena of the collision of steel with hard bodies with his own previous hypothetical explanation of them—adding, in the first notice of the subject, to the expression, "inflammable effluencies," that of "or vitrified sparks," and also introducing the words, "vitrified" and "particles," into the second.

It containeth also a salt,[7] and that in some plenty, which may occasion its fragility, as is also observable in coral. This is separable by the art of chemistry, unto the operations whereof, as calcination, reverberation, sublimation, distillation, it is liable, with other concrations. And in the preparation of crystal Paracelsus * hath made a rule for that of gems. Briefly, it consisteth of parts so far from an icy dissolution, that powerful menstruums are made for its emollition, whereby it may receive the tincture of minerals, and so resemble gems (as Boetius hath declared in the distillation of urine, spirits of wine, and turpentine;) and is not only triturable, and reducible into powder by contrition, but will subsist in a violent fire, and endure a vitrification. Whereby are testified its earthy and fixed parts: for vitrification is the last work of fire,[8] and a fusion of the salt and earth, which are the fixed elements of the composition, wherein the fusible salt draws the earth and infusible part into one *continuum;* and, therefore, ashes will not run from whence the salt is drawn, as bone ashes prepared for the test of metals. Common fusion in metals is also made by a violent heat, acting upon the volatile and fixed, the dry and humid parts of those bodies; which, notwithstanding, are so united, that, upon attenuation from heat, the humid parts will not fly away, but draw the fixed ones into fluor with them. Ordinary liquation, in wax and oily bodies, is made by a gentler heat, where the oil and salt, the fixed and fluid principles, will not easily separate.

* Paracelsus *de præparationibus.*

Browne is in error, however, with respect to diamonds, heliotropes, and agates; all which, if their shape be adapted to the purpose, will readily strike fire with steel, and also with each other. If by "marble" he means, as is most probable, the more beautiful rocks and mineral substances employed in building and ornamental architecture in general, he is further in error; for most of these will also strike fire; but few of the substances, however, to which the term marble is now usually applied, possess that property.—*Br.*

[7] *It containeth also a salt.*] It is scarcely requisite to observe that this statement is not correct, and must have originated in some mistake in conducting chemical experiments on rock-crystal.—*Br.*

[8] *for vitrification, &c.*] Instead of the remainder of this paragraph (altered in the 2nd edition) *Ed.* 1646 reads thus:—"For vitrification is the last work of fire, and when that arriveth, humidity is exhaled, for powdered glass emits no fume or exhalation, although it be laid upon red hot iron. And, therefore, when some commend the powder of burnt glass against the stone, they fall not under my comprehension, who cannot conceive how a body should be farther burned which hath already passed the extreamest test of fire."

All which, whether by vitrification, fusion, or liquation, being forced into fluent consistencies, do naturally regress into their former solidities. Whereas, the melting of ice is a simple resolution, or return from solid to fluid parts, wherein it naturally resteth.

As for colour, although crystal, in its pellucid body, seems to have none at all, yet in its reduction into powder, it hath a vail and shadow of blue; and in its coarser pieces is of a sadder hue than the powder of Venice glass;[9] and this complexion it will maintain, although it long endure the fire. Which, notwithstanding, needs not move us unto wonder; for vitrified and pellucid bodies are of a clearer complexion in their continuities than in their powders and atomical divisions. So *stibium*, or glass of antimony, appears somewhat red in glass, but in its powder yellow; so painted glass of a sanguine red will not ascend in powder above a murrey.[1]

As for the figure of crystal, (which is very strange, and forced Pliny to despair of resolution,) it is for the most part hexagonal, or six-cornered; being built upon a confused matter, from whence, as it were from a root, angular figures arise, even as in the amethyst and basaltes. Which regular figuration hath made some opinion, it hath not its determination from circumscription, or as conforming unto contiguities, but rather from a seminal root, and formative principle of its own,[2]

9 *Venice glass.*] A glass made at Venice, of a pebble called *cuogolo*, resembling white marble, found in the bed of the Tesino.

1 *murrey.*] Dark, purplish, red: used in this sense by Bacon and Boyle.

2 *formative principle of its own.*] With respect to rock-crystal, and also gallstones and other substances, as he observes, this is perfectly true: their crystalline forms are not impressed upon them by the surrounding bodies, but are the result of "a formative principle,"—the peculiar molecular attraction which is inherent in each substance. But all the bodies he subsequently mentions in this paragraph, as far as the *cornu ammonis* inclusive, although their forms also have undoubtedly arisen *from* formative principles of their own, do not owe their forms to crystalline attraction, but to *organization*; for they are all either parts of animals in a fossil state, or natural casts from them; which Browne, with the error common to his age, evidently supposes to be strictly mineral bodies, and not derived from animals; although, as is very remarkable, he actually, in his note to this passage, compares one of these fossils with a recent marine body belonging to the same natural group, the *echinidæ*—See ch. v, of this book, no. 10. In this point, however, our author's distinction of crystal from ice is fallacious; for although the latter (as well as the former also occasionally,) receives its figure from that of the bodies upon or among which it is formed; it, too, has a formative principle of its own, and occasionally crystallizes; its *structure* being always crystalline, even when its external form, as in general, is amorphous.—*Br.*

even as we observe in several other concretions. So the stones, which are sometimes found in the gall of a man, are most triangular and pyramidal, although the figure of that part seems not to co-operate thereto. So the *asteria*, or *lapis stellaris*, hath on it the figure of a star; so *lapis Judaicus* hath circular lines in length all down its body, and equidistant, as though they had been turned by art. So that we call a fairy-stone,* and is often found in gravel pits amongst us, being of an hemispherical figure, hath five double lines arising from the centre of its basis, which, if no accretion distract them, do commonly concur, and meet in the pole thereof. The figures are regular in many other stones, as in *belemnites*, *lapis anguinus*, *cornu Ammonis*, and many more; as, by those which have not the experience hereof, may be observed in their figures expressed by mineralogists. But ice receiveth its figure according unto the surface wherein it concreteth, or the circumambiency which conformeth it. So it is plain upon the surface of water, but round in hail, which is also a glaciation, and figured in its guttulous descent from the air, and so growing greater[3] or lesser according unto the accretion or pluvious aggelation about the mother and fundamental atoms thereof; which seems to be some feathery particles of snow, although snow itself be sexangular, or at least of a starry and many-pointed figure.

They are also differenced in the places of their generation; for, though crystal be found in cold countries, and where ice remaineth long, and the air exceedeth in cold, yet is it also found in regions where ice is seldom seen, or soon dissolved; as Pliny and Agricola relate of Cyprus, Caramania, and an island in the Red Sea. It hath been also found in the veins of minerals, sometimes agglutinated unto lead,[4] sometimes in rocks, opacous stones, and the marble face of Octavius, duke

* Which seemeth to be *echinites decima Aldrovandi; Musæi Metallici*, lib. 4. Rather *echinometrites*, as best resembling the *echinometra* found commonly on our sea shore.

[3] *and so, &c.*] Thus altered in the 2nd edition. *Ed.* 1646 reads—"And, therefore, Aristotle, in his Meteors, concludeth that hail which is not round is congealed nearer the earth, for that which falleth from on high is, by the length of its journey, corraded, and descendeth, therefore, in a lesser magnitude, but in a greater rotundity unto us."

[4] *sometimes agglutinated, &c.*] This, and the two following sentences were added in the 3rd edition.

of Parma.* It hath also constant veins: as, besides others, that of mount Salvino, about the territory of Bergamo, from whence, if part be taken, in no long tract of time, out of the same place, as from its mineral matrix, others are observed to arise. Which made the learned Cerautus to conclude, *videant hi an sit glacies, an verò corpus fossile.*[4] It is also found sometimes in common earth. But as for ice, it will not readily concrete but in the approachment of the air, as we have made trial in glasses of water, covered an inch with oil, which will not easily freeze in the hardest frosts of our climate. For water commonly concreteth first in its surface, and so conglaciates downward; and so will it do, although it be exposed in the coldest metal of lead, which well accordeth with that expression of Job, "the waters are hid as with a stone, and the face of the deep is frozen."† But whether water which hath been boiled or heated doth sooner receive this congelation, as commonly is delivered, we rest in the experiment of Cabeus,[5] who hath rejected the same in his excellent discourse of meteors.

They have contrary qualities elemental, and uses medicinal; for ice is cold and moist, of the quality of water; but crystal is cold and dry, according to the condition of earth. The use of ice is condemned by most physicians, that of crystal commended by many. For, although Dioscorides and Galen have left no mention thereof, yet hath Matthiolus, Agricola, and many, commended it in dysenteries and fluxes; all, for the increase of milk, most chemists, for the stone, and some, as Brassavolus and Boëtius, as an antidote against poison. Which occult and specifical operations are not expectable from ice; for, being but water congealed, it can never make good such qualities, nor will it reasonably admit of secret proprieties, which are the affections of forms and compositions at distance from their elements.

Having thus declared what crystal is not, it may afford some satisfaction to manifest what it is. To deliver, there-

* Wherein the sculptor found a piece of pure crystal. † Chap. 38.

[5] *Cabeus,*] Nicol. Cabeus, *In libros et Quæstiones,* 4 tom. fol. Romæ, 1646. *Meteorologicorum Aristotelis Commentaria* This passage was added in *Ed.* 1650.

fore, what, with the judgment of approved authors and best reason consisteth.—It is a mineral body, in the difference of stones,[6] and reduced by some unto that subdivision which comprehendeth gems; transparent, and resembling glass or ice, made of a lentous percolation[7] of earth, drawn from the most pure and limpid juice thereof, owing unto the coldness of the earth some concurrence or coadjuvancy, but not immediate determination and efficiency, which are wrought by the hand of its concretive spirit, the seeds of petrification and *Gorgon* of itself. As sensible philosophers[8] conceive of the generation of diamonds, iris,[9] beryls; not making them of frozen icicles, or from mere aqueous and glaciable substances, condensing them by frosts into solidities, vainly to be expected even from polary congelations, but from thin and finest earths, so well contempered and resolved, that transparency is not hindered, and containing lapidifical spirits, able to make good their solidities against the opposition and activity of outward contraries; and so leave a sensible difference between the bonds of glaciation, which, in the mountains of ice about the northern seas, are easily dissolved by ordinary heat of the sun, and between the finer ligatures of petrification, whereby not only the harder concretions of diamonds and saphires, but the softer veins of crystal remain indissolvable in scorching territories, and the negro land of Congo.

And, therefore, I fear[1] we commonly consider subterraneities not in contemplations sufficiently respective unto the creation. For, though Moses have left no mention of minerals, nor made any other description than suits unto the apparent

[6] *in the difference of stones.*] That is, "in the class or *division* of stones."

[7] *a lentous percolation.*] Dr. Johnson explains the word *lentous* (for which he cites no other authority than Browne) as meaning *viscous* and *tenacious*; but it is evidently used here to express "a *gradual* filtration or straining."

[8] *as sensible philosophers.*] Instead of the remainder of this paragraph (so altered in 3rd edition,) *Ed.* 1646 has the following passage:—"as we may conceive in stones and gems; as diamonds, beryls, saphires, and the like, whose generation we cannot with satisfaction confine unto the remote activity of the sun, or the common operation of coldness in the earth, but may more safely refer it unto a lapidificall siccity and congelitive principle, which determines prepared materials unto special concretions."

[9] *iris.*] Perhaps he refers to opal, or irisated quartz.

[1] *And, therefore, I fear.*] This paragraph gives an excellent and very accurate view of the nature of the beings composing the mineral kingdom,—if by "seeds" we understand *formative principles.—Br.*

and visible creation, yet is there, unquestionably, a very large class of creatures in the earth, far above the condition of elementarity. And, although not in a distinct and indisputable way of vivency, or answering in all points the properties or affections of plants, yet in inferior and descending constitutions they do, like these, contain specifical distinctions, and are determined by seminalities, that is, created and defined seeds committed unto the earth from the beginning. Wherein, although they attain not the indubitable requisites of animation, yet have they a near affinity thereto. And, though we want a proper name and expressive appellation, yet are they not to be closed up in the general name of concretions, or lightly passed over, as only elementary and subterraneous mixtions.

The principal and most gemmary affection is its tralucency:[2] as for irradiancy or sparkling, which is found in many gems, it is not discoverable in this, for it cometh short of their compactness and durity; and, therefore, requireth not the emery, as the saphire, granate, and topaz, but will receive impression from steel, in a manner like the turquoise. As for its diaphanity or perspicuity, it enjoyeth that most eminently; and the reason thereof is its continuity, as having its earthy and salinous parts so exactly resolved, that its body is left imporous, and not discreted by atomical terminations. For that continuity of parts is the cause of perspicuity,[3] is made perspicuous by two ways of experiment. That is, either in effecting transparency in those bodies which were not so before, or at least far short of the additional degree: so snow becomes transparent upon liquation; so horns and bodies re-

[2] *tralucency.*] For "translucency." Johnson gives *tralucent*, citing Davies and B. Jonson—but not *tralucency.*

[3] *continuity of parts is the cause of perspicuity.*] The explanation of the cause of transparency in this paragraph is quite accurate, so far as it goes; but to make it satisfactory, it must be added, that continuity of parts is necessary to transparency, because, in that case, the refractive effect upon the rays of light is uniform throughout the body, so that the rays (however those which do not fall upon the surface in a direction perpendicular to it may be diverted from their original course,) come unbroken to the eye; whereas, when the continuity is broken, as in the case of powdered glass, the interstices of which are filled with air, which has a different refractive power from the particles of glass, the rays are again and again broken, and turned from their course, so that they cannot reach the eye *through* the substance, so as to present images of the bodies on the other side.—*Br.*

solvable into continued parts or jelly; the like is observable in oiled paper, wherein, the interstitial divisions being continuated by the accession of oil, it becometh more transparent, and admits the visible rays with less umbrosity. Or else the same is effected by rendering those bodies opacous which were before pellucid and perspicuous: so glass, which was before diaphanous, being by powder reduced into multiplicity of superficies, becomes an opacous body, and will not transmit the light: so it is in crystal powdered, and so it is also before, for if it be made hot in a crucible, and presently projected upon water, it will grow dim, and abate its diaphanity: for the water, entering the body, begets a division of parts, and a termination of atoms united before unto continuity.[4]

The ground of this opinion[5] might be, first, the conclusions of some men from experience; for as much as crystal is found sometimes in rocks, and in some places not much unlike the stirious or stillicidious dependencies of ice.[6] Which, notwithstanding, may happen, either in places which have been forsaken or left bare by the earth, or may be petrifications, or mineral indurations, like other gems, proceeding from percolations of the earth disposed unto such concretions.

The second and most common ground is from the name *crystallus*, whereby in Greek both ice and crystal are expressed; which many not duly considering, have, from their community of name, conceived a community of nature, and what was ascribed unto the one, not unfitly appliable unto the other. But this is a fallacy of equivocation, from a society in name inferring an identity in nature. By this fallacy was he deceived that drank *aqua fortis* for strong water:[7] by this are

[4] *for if it be made hot, &c.*] This statement also is generally true, but the cause of the opacity produced is not the entering of the water into the crystal, but its being filled with cracks arising from the sudden cooling, and these, whether filled with water or with air, having a different refractive power from the crystal itself, an effect takes place corresponding to that explained above.

It may be observed, upon the whole, that there is much excellent reasoning and much real science in this chapter, but mingled, of course, with occasional fallacies, and with some now antiquated prejudices.—*Br.*

[5] *The ground of this opinion.*] Namely, "that crystal is ice congealed beyond liquation."

[6] *the stirious or stillicidious, &c.*] *Stirious*, like icicles: *stillicidious*, falling in drops.

[7] aqua fortis, *&c.*] An Englishman gave occasion to this error; who, translating that tract (of the French Ld. ****) of Salt and Fire, renders it so, out of a gross pernicious ignorance, which I wisht might be corrected.—*Wr.*

they deluded who conceive *spermaceti*, which is found about the head, to be the spawn of the whale; or take *sanguis draconis*, which is the gum of a tree, to be the blood of a dragon. By the same logic we may infer the crystalline humour of the eye, or rather the crystalline heaven above, to be of the substance of crystal here below; or that God sendeth down crystal, because it is delivered in the vulgate translation, Ps. 47: *mittit crystallum suum sicut buccellas.* Which translation, although it literally express the septuagint, yet is there no more meant thereby than what our translation in plain English expresseth, that is, "he casteth forth his ice like morsels;" or what Tremellius and Junius as clearly deliver, *dejicit gelu suum sicut frusta, coram frigore ejus quis consistet?* which proper and Latin expressions, had they been observed in ancient translations, elder expositors had not been misguided by the synonymy; nor had they afforded occasion unto Austin, the Gloss,[8] Lyranus, and many others, to have taken up the common conceit, and spoken of this text conformably unto the opinion rejected.

[8] *the Gloss.*] Referring probably to the annotations of Walafridus Strabo, who flourished in the ninth century. They were called *glossa ordinaria*, and for many years were received as the only authorized interpretation of the Bible. The best edition of the Gloss of Strabo, as well of the *Postilla*, or expositions of Nicolas de Lyra, or Lyranus, was published in folio, at Antwerp, in 1634.

Having received from Mr. Brayley several notes relating to the preceding chapter too late for insertion in their proper places, I have thought it better to place them here than to omit them.—EDITOR.

Page 268, line 28. *many waters and springs will never freeze.*] Our author is mistaken in ascribing this phenomenon to the mineral contents of the water exhibiting it: no springs are so strongly impregnated with mineral substances as to have their freezing points affected by it in any considerable degree. The true cause of the phenomenon is, in the case of springs and lakes, their depth, and in that of rivers, their depth in conjunction with the rapidity with which they flow. For, owing to the mobility of the particles of water, and to the circumstance that, like all other bodies, it becomes heavier, in consequence of its contraction in bulk, in proportion as its temperature is reduced, (with a particular exception, which it is unnecessary now to mention,) when the surface or upper portion of the water gives out its heat to the atmosphere, on account of the temperature of that medium becoming inferior to its own, the portion of water so cooled down, becoming heavier than the subjacent portion, sinks towards the bottom, and an uncooled portion takes its place, which, in its turn, is cooled, and rendered heavier by the same process. Until, therefore, the whole of the water has been reduced to the freezing point by the continuance of this operation, no ice can form upon it; for, until then, the temperature of that portion which is in contact with the atmosphere will be above the freezing point. In the case of deep wells and lakes, this occu-

pies so long a time, that, in temperate climates, the cold season has passed away, and the temperature of the atmosphere has ceased to be inferior to that of the upper portion of the water, before the whole has been reduced to the freezing point.—*Br.*

Page 269, line 31. *or also by co-operation of any nitrous coagulum.*] The doubt here expressed, whether the congelation of water is simply owing to cold, or whether the operation of cold may not be aided by salt petre or some analogous principle, is a remnant of the notions entertained of that salt by the alchemists, and the older operators in true chemistry who immediately succeeded them, of both whose ideas on such subjects our author retained a few, though (considering the state of science in his time) but very few indeed, and those of minor importance only. The arguments which he adduces in favour of this doubt are as fallacious as the supposition itself, which it involves. "That ice may be made with salt and snow by the fire-side," arises, not from any peculiar congealing virtue in the salt, but merely from the circumstance that the affinity it has for water produces a rapid liquefaction of the snow, which, robbing the surrounding bodies of their heat, in order itself to assume the liquid form (their *sensible* heat thus becoming *latent* in the resulting water) produces the cold. The case is similar with respect to the "ice made by saltpetre and water;" for here, the water subjected to experiment is reduced to the solid form by the abstraction of its sensible heat, consequent upon the liquefaction of the salt, in the solution of which it becomes latent.—*Br.*

Page 270, line 25. *yet will they not suffer a liquation.*] Modern chemistry shews our author to be in error in his opinion, that heat of a peculiar nature is required for the fusion of metals. The only reason why the generality of metals cannot be melted by hot water is, that they require a higher temperature for their liquefaction than can be given to that fluid under ordinary circumstances. But there is an alloy of bismuth, lead, and tin, which melts at a temperature inferior to that of boiling water, (commonly called on that account *fusible metal*), and which accordingly melts when immersed in that fluid. Under pressure, as when heated in Papin's digester for instance, water can be raised to a much higher temperature than that at which it boils under the common pressure of the atmosphere; and thus can be made to melt lead, which is quite infusible in common boiling water.—*Br.*

Page 271, line 12. *the concretion of ice will not endure a dry attrition, &c.*] A similar exertion of ingenuity to that which has discovered a knowledge of the true chemical mixture of the atmosphere in certain mythological tales of the Egyptian priests, and of that of the constituents of water in some of the speculations of Lucretius, might, with far less aberration from the truth, affirm that in this sentence of our author is virtually an anticipation of Sir H. Davy's experiment, in which ice was melted by the mere friction of two pieces of it together. For as a cloth would be a very bad conductor of heat, the experiment of our author might, with care, be so made as to cause the fusion of the ice by the heat generated by the friction alone, independent of that which might (without care) be conducted from the hand of the experimenter through the cloth, and of that also which would be derived from the cloth itself, if not previously reduced to the freezing temperature. It is plain, also, from the author's use of the word "calefy" in the next period, that he believed the ice to be melted by the heat generated by the friction, and not by the friction alone, mechanically considered. —*Br.*

Page 271, line 14. *But crystal will calefy unto electricity.*] It is an accurate observation that rock-crystal becomes electric by friction; but our author is mistaken in attributing the excitation of electricity to the heat produced by the friction. In this case, and in all others of electricity so excited, the agency of the friction appears to be merely mechanical.—*Br.*

Page 271, line 23. *But ice will swim in water, &c.*] The whole of this paragraph is excellent, in assertion as well as in argument, giving a very accurate view of the facts described. It is quite true that the ice weighs "somewhat less than the water it possesseth," specifically; that is, a bulk of ice equal to that of the water in its liquid form would weigh less than the water; and that this is the reason why it swims upon water. It is also true that ordinary ice is less compact, less continuous in its solidity than other crystalline bodies, and that it is full of spumes and bubbles, and "which abate its gravity." The last statement,

that the freezing of water is at the same time condensation and rarefaction, is also correct: that its solid state must imply a kind of condensation, some sort of molecular approximation, is clear; and yet it expands in freezing, and thus unquestionably undergoes rarefaction.—*Br.*

Page 272, line 22. *For besides the spirit and mercurial principle, &c.*] Our author's notions of the chemical nature of rock-crystal are those of the alchemists, and are wholly unfounded. There is neither spirit, mercury, nor sulphur, in rock-crystal; at least, nothing to which those appellations can properly be applied: it is *silica*, or the earth of flints, in a pure crystallized form, itself composed of equal weights of *silicon*, (a single combustible substance), and oxygen. It may be suspected, with some plausibility, however, that the notion of the alchemists, that such bodies as rock-crystal and the precious stones contained sulphur, might have arisen from their having, in some of their multifarious operations, actually separated its combustible base; they always attributing combustibility to the presence of sulphur. Although they were altogether ignorant of the true nature of the processes which they employed, and of the effects which they witnessed, it cannot be doubted, that in their operations many of the simple as well as compound bodies, which modern chemists have described, would occasionally be evolved, though, in most instances, they would be caused again to enter into combination immediately, or be confounded with other well-known bodies, and, in either case, they would of course escape detection and record. —*Br.*

CHAPTER II.

Concerning the Loadstone: of things particularly spoken thereof, evidently or probably true.

AND first, we conceive the earth to be a magnetical body.[9] A magnetical body, we term, not only that which hath a power attractive, but that which, seated in a convenient medium, naturally disposeth itself to one invariable and fixed situation. And such a magnetical virtue we conceive to be in the globe of the earth, whereby, as unto its natural points and proper terms, it disposeth itself unto the poles; being so framed, constituted, and ordered unto these points, that those parts which are now at the poles, would not naturally abide unto the equator, nor Greenland remain in the place of Magellanica.

9 *And first, we conceive the earth, &c.*] The chapter which begins with this opinion, though containing many errors, is yet characterized by the sagacity and acuteness so often displayed by the author in treating of a complex and difficult subject of science, and also by those philosophic views in which he occasionally anticipated the most profound results attained in the modern investigations of the powers of nature. The remark now immediately before us partakes, in all respects, of the character of the chapter itself. That the earth is "a magnetical body," in the senses in which we apply that term to the magnet itself, and to the metals, iron, nickel, and some others, is a notion for which there is no foundation whatever; nor have we any reason for supposing that the "polary position" of the earth, or the direction of its axis in space, is produced by magnetism. And further, there is a deep error in philosophy in the fundamental notion of the author, that a magnetical body, as he defines it, naturally "disposeth itself" to one invariable and fixed situation; the fact being, as all the phenomena of magnetism conspire to evince, that magnetized bodies which apparently possess that property are in reality *disposed to it*, by the influence of a subtle agent permeating them, and the action of which is in some unknown manner connected with an arrangement in space, having a particular relation to the figure and position, and probably to some of the material constituents also of the earth. Supposing it to be true (which at present, however, we have no reason to suppose) that if the whole earth could be violently removed, it would "return unto its polary position again," that effect would not result from an inherent virtue in the planet itself, but from its being so constituted as to receive and obey the action of the vortical or other motions of the subtle ethereal fluid, in which (from the recent investigations of Encke and others,) we now know it to be placed, and by which also we know it to be pervaded: this would cause it to return to its position, much in the same way as a ball held by strings in a particular position returns to that position after displacement, by their action upon it; or, which is a closer representation of the circumstances, as a magnetic needle, after disturbance, returns to its original direction, to the magnetic north and south, by the force of terrestrial magnetism acting upon it.—*Br.*

And if the whole earth were violently removed, yet would it not forego its primitive points, nor pitch in the east or west, but return unto its polary position again. For, though by compactness or gravity it may acquire the lowest place, and become the centre of the universe,[1] yet, that it makes good that point, not varying at all by the accession of bodies upon, or secession thereof from its surface, perturbing the equilibration of either hemisphere (whereby the altitude of the stars might vary), or that it strictly maintains the north and southern points, that neither upon the motions of the heavens, air, and winds without, large eruptions and divisions of parts within its polary parts, should never incline or veer unto the equator (whereby the latitude of places should also vary), it cannot so well be salved from gravity, as a magnetical verticity. This is, probably, that foundation the wisdom of the Creator hath laid unto the earth; in this sense we may more nearly apprehend, and sensibly make out the expressions of holy scripture, as, *Firmavit orbem terræ qui non commovebitur*, "he hath made the round world so sure, that it cannot be moved;"* as when it is said by Job, *extendit aquilonem super vacuo, &c.*, "he stretcheth forth the north upon the empty place, and hangeth the earth upon nothing."† And this is the most probable answer unto that great question, "Whereupon are the foundations of the earth fastened, or who laid the corner-stone thereof?" Had they been acquainted with this principle, Anaxagoras, Socrates, and Democritus, had better made out the ground of this stability; Xenophanes had not been fain to say, the earth hath no bottom; and Thales Milesius, to make it swim in water.[2]

* Psalm xciii. † Job xxxviii.

[1] *and become the centre of the universe.*] It must be borne in mind that the author was not a convert to the Copernican system of astronomy. His opposite opinions on this science will be observed to pervade all his reasonings, and to tinge all his feelings.

[2] *water.*] The first edition continues thus:—"Now whether the earth stand still, or moveth circularly, we may concede this magnetical stability: for although it move, in that conversion the poles and centre may still remain the same, as is conceived in the magnetical bodies of heaven, especially Jupiter and the sun; which, according to Galileus, Kepler, and Fabricius, are observed to have dinetical motions and certain revolutions about their proper centres; and though the one in about the space of ten days, the other in less than one, accomplish this revolution, yet do they observe a constant habitude unto their poles, and firme themselves thereon in their gyration."

Nor is the vigour of this great body included only in itself, or circumferenced by its surface, but diffused at indeterminate distances through the air, water, and all bodies circumjacent; exciting and impregnating magnetical bodies within its surface or without it, and performing, in a secret and invisible way, what we evidently behold effected by the loadstone. For these effluxions penetrate all bodies, and like the species of visible objects are ever ready in the medium, and lay hold on all bodies proportionate or capable of their action; those bodies likewise, being of a congenerous nature, do readily receive the impressions of their motor; and, if not fettered by their gravity, conform themselves to situations wherein they best unite unto their animator. And this will sufficiently appear from the observations that are to follow, which can no better way be made out, than by this we speak of, the magnetical vigour of the earth.[3] Now, whether these effluviums do fly by striated atoms and winding particles, as Renatus des Cartes conceiveth, or glide by streams attracted from either pole and hemisphere of the earth unto the equator, as Sir Kenelm Digby excellently declareth, it takes not away[4] this virtue of the earth; but more distinctly sets down the gests and progress thereof, and are conceits of eminent use to salve magnetical phenomena. And, as in astronomy, those hypotheses (though never so strange) are best esteemed which best do salve appearances, so surely in philosophy those principles (though seeming monstrous) may with advantage be embraced, which best confirm experiment, and afford the readiest reason of observation. And truly the doctrine of effluxions,[5] their penetrating natures, their invisible paths, and

[3] *the magnetical vigour of the earth.*] Having stated, in the preceding note, in what sense we are not to regard the earth as a magnet, we may now admit that in the sense of a body permeated by the magnetic fluid (whatever that may be) the earth may be regarded as a great complex magnet, or rather as a collection of substances, many of which, under certain circumstances, are susceptible of the magnetic influence, and display accordingly magnetic phenomena.—*Br.*

[4] *it takes not away.*] Read, "they take not away, &c." viz. "Neither of these opinions takes away, &c."—*Wr.*

[5] *And truly the doctrine of effluxions.*] The remarks in the passage commencing with these words may be considered to have been made good by the discoveries of the present century, if we regard the notion of "effluxions" to result from an obscure perception of the existence and functions of those ethereal fluids, to the motions of which the united results of modern science lead us to attribute the phenomena of heat, light, electricity, magnetism, &c. It is requisite, however, to observe, that what Browne, as

insuspected effects, are very considerable; for, besides this magnetical one of the earth, several effusions there may be from divers other bodies, which invisibly act their parts at any time, and, perhaps, through any medium; a part of philosophy but yet in discovery, and will, I fear, prove the last leaf to be turned over in the book of nature.

First, therefore, it is true, and confirmable by every experiment, that steel and good iron, never excited by the loadstone, discover in themselves a verticity;[6] that is, a directive or polary faculty, whereby, conveniently placed, they do septentrionate * at one extreme, and australize † at another. This is manifestable in long and thin plates of steel perforated in the middle and equilibrated; or by an easier way in long wires equiponderate with untwisted silk and soft wax; for, in this manner pendulous, they will conform themselves meridionally, directing one extreme unto the north, another to the south. The same is also manifested in steel wires thrust through little spheres or globes of cork and floated on the water, or in naked needles gently let fall thereon; for, so disposed, they will not rest until they have found out the meridian, and as near as they can, lie parallel unto the axis of the earth; sometimes the eye, sometimes the point, northward in divers needles, but the same point always in most; conforming themselves unto the whole earth, in the same manner as they do unto every loadstone. For, if a needle untouched be hanged above a loadstone, it will convert into a parallel position thereto; for in this situation it can best receive its verticity, and be excited proportionably at both extremes. Now this direction proceeds, not primitively from themselves,

* Point to the north. † Point to the south.

well as some of his predecessors and contemporaries, appears to have supposed to consist of subtle *emanations* from grosser bodies, must be regarded contrariwise, agreeably to the most profound researches of our time, as the principles from which all ordinary ponderable matter derives its activity—from which it takes all its force and energy.—*Br.*

6 *Steel and good iron, &c.*] This, in the sense in which the author intends us to understand it, is an error: unmagnetized iron or steel has no directive power; the experiments apparently alluded to must have been performed with steel plates, wires, and needles, which had, in reality, become magnetic, although they might not have been actually "excited by the loadstone." As an observation that the magnetic virtue is possessed by bodies which have not been so excited, it is quite worthy of Browne.—*Br.*

but is derivative and contracted from the magnetical effluxions of the earth, which they have winded in their hammering and formation, or else, by long continuance in one position, as we shall declare hereafter.

It is likewise true what is delivered of irons heated in the fire, that they contract a verticity in their refrigeration;[7] for, heated red-hot and cooled in the meridian from north to south, they presently contract a polary power, and being poised in air or water, convert that part unto the north which respected that point in its refrigeration; so that if they had no sensible verticity before, it may be acquired by this way, or if they had any, it might be exchanged by contrary position in the cooling. For by the fire they amit not only many drossy and scorious parts, but whatsoever they had received either from the earth or loadstone; and so being naked and despoiled of all verticity, the magnetical atoms invade their bodies with more effect and agility.[8]

Neither is it only true what Gilbertus first observed, that irons refrigerated north and south acquire a directive faculty,

[7] *they contract a verticity, &c.*] The statements here made, to the end of the period, are probably true, provided the cooling takes place in a direction corresponding, or nearly corresponding, to that of the dip; but the extent to which they are true, so far as modern experiments afford us the means of verifying them, may be best seen, perhaps, by comparing them with the following observations made by Mr. Barlow, and published in the *Encyclopædia Metropolitana*, Treatise on Magnetism, § v, 38, 39:—For certain purposes of research, which it is unnecessary here to state, Mr. Barlow heated in a furnace a bar of soft iron and a bar of cast-iron, nearly of equal dimensions, placing them in an inclined position, in the direction of the dip of the needle, and ascertaining their attractive effect upon the horizontal or common magnetic needle previously to the application of heat. As soon as the bars arrived at a high blood-red heat, they began to exercise an increased power of attraction upon the needle, and in a minute or two this attained its maximum, which was far greater than the attractive power of the bars when cold; the deviation produced by one of them being in the latter case 21° 20′, but in the former, 78° 30′. In the course of these experiments the following facts were observed, which bear directly upon the passage of our author now before us:—"It should be observed here, that the great attraction produced by the heat did not subside with it, provided the bar remained in its place undisturbed; for after some days it was found that the power of the bar continued just the same as at the time of making the experiment, when it had not been displaced; but then the bar upon trial was always found to possess a certain degree of fixed magnetism, its other extremity producing an opposite effect upon the needle; but if the bar was inverted, while it retained any visible colour from the heat, both ends produced exactly the same deflection: as to the magnetic effect to which we have alluded above, it was lost, or at least a great part of it, after leaving the bar for some time horizontal, or, after its being thrown about with other pieces of iron.—*Br.*

[8] *For by the fire they amit, &c. . . . . whatsoever they had received either from the earth or loadstone; and so, &c.*] This statement is true in itself, but unless viewed in con-

but, if they be cooled upright and perpendicularly,[9] they will also obtain the same: that part which is cooled towards the north, on this side of the equator, converting itself unto the north, and attracting the south point of the needle; the other and highest extreme respecting the south, and attracting the northern, according unto the laws magnetical: for (what must be observed) contrary poles or faces attract each other, as the north the south; and the like decline each other, as the north the north. Now on this side[1] of the equator, that extreme which is next the earth is animated unto the north, and the contrary unto the south, so that in coition it applies itself quite oppositely, the coition or attraction being contrary to the verticity or direction. Contrary, if we speak according unto

nexion with other facts it may produce an erroneous impression upon the mind. Mr. Barlow's experiments have also elucidated this subject; his results on which will be appropriately introduced by an historical notice of it, derived from the Treatise on Magnetism cited in the preceding note, from which the comparative amount and nature of our author's knowledge respecting it may be inferred, by contrasting it with his own remarks. "The effect of temperature in changing and destroying the magnetic power of iron bodies had been long imperfectly known, but it had never been satisfactorily established prior to Mr. Barlow's experiments. It is, for example, stated in Newton's *Optics*, that red-hot iron has no magnetic property, while Father Kircher asserts, that the magnet will attract red-hot iron as well as cold; Mr. Cavallo again found, that although iron at a red heat had a greater power over the magnet than when cold, yet at the white heat it had less; but he was not aware that it was entirely lost at a white heat."—(*Encyc. Metrop.* Magnetism, § vi, 41.) The last mentioned fact, viz. that the magnetic action of iron is destroyed by a white heat, was ascertained by Mr. Barlow in the experiments already noticed, and he observed, on the same occasion, an extraordinary phænomenon, the consideration of which will explain some of the apparently contradictory facts which are related by our author in this chapter. It is, that "after the iron loses its entire power of attraction at the white heat, it acquires, as that colour subsides into the bright red and red, an attractive power, the reverse of what it had been when cold; so that if the bar and needle are so situated that the north end [of the needle] is attracted when the iron is cold, the south end will be attracted during the above interval," that is, while it is passing through the high temperatures indicated by the shades of colour just mentioned; after which the usual attractive power again takes place in the increased degree stated in the preceding note.—*Br.*

[9] *but if they be cooled upright, &c.*] This statement is quite accurate; and, in fact, a nearly perpendicular position is more favourable to the reception of magnetism by the iron than the horizontal. The effect depends upon the suitable position of the iron for receiving and retaining a portion of the magnetism of the earth, and the position in which the greatest effect is exerted by the earth's magnetism is when the iron is placed in the position of the *dipping needle;* that is, inclined to the magnetic north at an angle (in these latitudes, and at the *present* time) of about 69¾ degrees with the horizon. The subject is resumed, and with equal correctness, towards the end of the next paragraph, which has evidently been written from experiment. Both are replete with just representations of the facts.—*Br.*

[1] *Now on this side, &c.*] Itt is certainly knowne that beyond the line the needle keeps his posture to the north, as truly as att the first setting out of England.—*Wr.*

common use, yet alike, if we conceive the virtue of the north pole to diffuse itself, and open at the south, and the south at the north again.

This polarity from refrigeration, upon extremity, and in defect of a loadstone, might serve to invigorate and touch a needle any where; and this, allowing variation, is also the readiest way at any season to discover the north or south; and surely far more certain than what is affirmed of the grains and circles in trees, or the figure in the root of fern. For if we erect a red-hot wire until it cool, then hang it up with wax and untwisted silk, where the lower end and that which cooled next the earth doth rest, that is the northern point; and this we affirm will still be true, whether it be cooled in the air or extinguished in water, oil of vitriol, *aqua fortis*, or quicksilver. And this is also evidenced in culinary utensils, and irons that often feel the force of fire, as tongs, fire-shovels, prongs, and andirons; all of which acquire a magnetical and polary condition, and, being suspended, convert their lower extremes unto the north; with the same attracting the southern point of the needle. For easier experiment, if we place a needle touched at the foot of tongs or andirons, it will obvert or turn aside its lilly or north point, and conform its *cuspis* or south extreme unto the andiron. The like verticity, though more obscurely, is also contracted by bricks and tiles,[2] as we have made trial in some taken out of the backs of chimneys. Now, to contract this direction, there needs not a total ignition, nor is it necessary the irons should be red-hot all over. For if a wire be heated only at one end, according as that end is cooled upward or downward, it respectively acquires a verticity, as we have declared in wires totally candent. Nor is it absolutely requisite they

2 *The like verticity, &c.*] The cause of this is doubtless the magnetism acquired by the particles of oxide of iron disseminated throughout the clay of which bricks and tiles are made, and which, of course, remain distributed in the same sensibly uniform manner in the bricks and tiles themselves. Each particle itself acquiring, by being placed in a position not greatly deviating from that of the dipping needle, magnetical polarity of the same kind as the rest, the result is a general polarity of all, which, freely permeating the earthy matter, appears to be possessed by the brick or tile itself. Assuming the author's experiment to be correct, (and this there is no reason to doubt,) such must be the explanation of the facts. The subject will be resumed under another form, when commenting upon the passage "*Of rocks magnetical*," in the following chapter.—*Br.*

should be cooled perpendicularly, or strictly lie in the meridian; for, whether they be refrigerated inclinatorily or somewhat equinoxially, that is, towards the eastern or western points, though in a lesser degree, they discover some verticity.

Nor is this only true in irons, but in the loadstone itself. For if a loadstone be made red-hot, it loseth the magnetical vigour it had before in itself, and acquires another from the earth in its refrigeration; for that part which cooleth toward the earth will acquire the respect of the north, and attract the southern point or *cuspis* of the needle. The experiment hereof we made in a loadstone of a parallelogram or long square figure; wherein only inverting the extremes, as it came out of the fire, we altered the poles or faces thereof at pleasure.

It is also true what is delivered of the direction and coition of irons, that they contract a verticity by long and continued position; that is, not only being placed from north to south, and lying in the meridian, but respecting the zenith and perpendicular unto the centre of the earth; as is manifest in bars of windows, casements, hinges, and the like. For if we present the needles unto their lower extremes, it wheels about and turns its southern point unto them. The same condition in long time do bricks contract which are placed in walls, and, therefore, it may be a fallible way to find out the meridian by placing the needle on a wall; for some bricks therein, by a long and continued position, are often magnetically enabled to distract the polarity of the needle. And, therefore, those irons which are said to have been converted into loadstones, whether they were real conversions or only attractive augmentations, might be much promoted by this position: as the iron cross of an hundred weight upon the church of St. John, in Ariminum, or that loadstoned iron of Cæsar Moderatus, set down by Aldrovandus.*[3]

Lastly, irons do manifest a verticity, not only upon refrigeration and constant situation, but, (what is wonderful, and advanceth the magnetical hypothesis) they evidence the same

* *De mineralibus.*

[3] *And, therefore, those irons, &c.*] Added in the 2nd edition.

by mere position, according as they are inverted, and their extremes disposed respectively unto the earth. For if an iron or steel, not firmly excited, be held perpendicularly or inclinatorily unto the needle, the lower end thereof will attract the *cuspis* or southern point; but if the same extreme be inverted and held under the needle, it will then attract the lilly or northern point; for by inversion it changeth its direction acquired before, and receiveth a new and southern polarity from the earth, as being the upper extreme.[4] Now, if an iron be touched before, it varieth not in this manner; for then it admits not this magnetical impression, as being already informed by the loadstone, and polarily determined by its pre-action.

And from these grounds may we best determine why the northern pole of the loadstone attracted a greater weight than the southern on this side the equator; why the stone is best preserved in a natural and polary situation; and why, as Gilbertus observeth, it respecteth that pole, out of the earth, which it regarded in its mineral bed and subterraneous position.

It is likewise true and wonderful, what is delivered of the inclination or declination of the loadstone;[5] that is, the descent

[4] *For if an iron or steel, &c.*] The magnetism of the earth appears to emanate from it in curves, originating far within the earth, or perhaps at its centre, their planes being magnetic meridians, but which, for small distances, are sensibly straight lines. The angles which they form with the horizon, or, what is practically the same, with the earth's surface, is the angle of the dip of the needle for each latitude respectively, being, as already stated, about 69¾ degrees for the British Islands at the present time. The dipping needle, therefore, is nothing but a magnetized body freely obeying the tendency imparted to it by these curves, and, in fact, exhibiting their direction at each particular spot. Now, if a bar of soft iron, or other body susceptible of magnetism, but perfectly free from it, be held in the direction of the dipping needle it acquires polarity, for the time, the lower end becoming a south pole, attracting the north end of a compass needle; and the upper a north pole, attracting the south end of the needle. If the bar be inverted, but its direction still preserved, the end which was before the north pole will become the south pole, and *vice versâ*. If, however, it has already received permanent magnetism, these effects do not take place; agreeably to our author's statement.—*Br.*

[5] *inclination or declination of the loadstone.*] The phænomena described in this and the succeeding paragraph, are those of the *dip* of the magnetic needle, now usually observed by means of a needle placed in a circle divided into degrees, &c., in order to show the amount of the dip, or the angle formed with the horizon by the needle when allowed freely to obey the influence of terrestrial magnetism. The reader will be enabled to form correct ideas on this subject from the present brief remarks, if taken in conjunction with the three preceding notes, and also with the next, by the same annotator, in which the history of the dipping needle is continued.—*Br.*

of the needle below the plane of the horizon.' For long needles, which stood before upon their axis parallel unto the horizon, being vigorously excited, incline and bend downward, depressing the north extreme below the horizon; that is, the north on this, the south on the other side of the equator; and at the very line or middle circle stand without deflexion. And this is evidenced, not only from observations of the needle in several parts of the earth, but sundry experiments in any part thereof, as in a long steel wire, equilibrated or evenly balanced in the air; for excited by a vigorous loadstone it will somewhat depress its animated extreme, and intersect the horizontal circumference. It is also manifest in a needle pierced through a globe of cork so cut away and pared by degrees, that it will swim under water, yet sink not unto the bottom, which may be well effected; for if the cork be a thought too light to sink under the surface, the body of the water may be attenuated with spirits of wine; if too heavy, it may be incrassated with salt; and if by chance too much be added, it may again be thinned by a proportionable addition of fresh water. If, then, the needle be taken out, actively touched, and put in again, it will depress and bow down its northern head toward the bottom, and advance its southern extremity toward the brim. This way, invented by Gilbertus, may seem of difficulty; the same, with less labour, may be observed in a needled sphere of cork equally contiguous unto the surface of the water; for if the needle be not exactly equiponderant, that end which is a thought too light, if touched, becometh even; that needle, alsó, which will but just swim under water, if forcibly touched, will sink deeper, and sometimes unto the bottom. If, likewise, that inclinatory virtue be destroyed by a touch from the contrary pole, that end which before was elevated will then decline; and this might perhaps be observed in some scales exactly balanced, and in such needles which, for their bulk, can hardly be supported by the water. For, if they be powerfully excited, and equally let fall, they commonly sink down and break the water at that extreme whereat they were septentrionally excited; and by this way it is conceived there may be some fraud in the weighing of precious commodities.

and such as carry a value in quarter-grains, by placing a powerful loadstone above or below, according as we intend to depress or elevate one extreme.

Now if these magnetical emissions be only qualities, and the gravity of bodies incline them only unto the earth, surely that which alone moveth other bodies to descent, carrieth not the stroke in this, but rather the magnetical alliciency of the earth; unto which with alacrity it applieth itself, and in the very same way unto the whole earth, as it doth unto a single loadstone. For if an untouched needle be at a distance suspended over a loadstone, it will not hang parallel, but decline at the north extreme, and at that part will first salute its director. Again, what is also wonderful, this inclination is not invariable; for just under the line the needle lieth parallel with the horizon,[6] but sailing north or south it beginneth to incline, and increaseth according as it approacheth unto either pole; and would at last endeavour to erect itself.[7] And

[6] *just under the line, &c.*] This statement, in the terms in which it is made, is incorrect; for it is found by experiment, that while under the line or equator of the earth, in some places, the dip is still considerable, in some places south of the equator it continues to be north, and conversely in some places north of the equator it is south. But if we substitute *magnetic equator* for "the line" or true equator, and the *magnetic poles* for the poles of the earth, it becomes accurate. According to Mr. Barlow, (*Phil. Trans.* 1831, p. 105,) the results obtained by Sir E. Parry, and by the late Capt. Foster, for the situation of the magnetic poles, give a *magnetic equator*, which cuts the true equator in about 14° east, and 166° west longitude.

The following principles of the geometrical construction of what is called the *magnetic sphere* will enable the reader accurately to estimate the degree of truth which exists in our author's remarks on terrestrial magnetism: they are derived from Mr. Barlow's "Treatise" already referred to, § xxii, 193. "The two centres which give direction to magnetised needles at the earth's surface, are situated in two points indefinitely near to each other in the centre of the terrestrial sphere. If we conceive the indefinitely short lines which unite these centres to be produced both ways to the surface, the diameter thus formed is called the *terrestrial magnetic axis*. The circle cutting this at right angles is the *terrestrial magnetic equator;* and the extremities of this axis, or diameter, are the poles of this equator, or the *terrestrial magnetic poles.*

"If the magnetic poles coincided with the poles of the earth, the magnetic equator would, in like manner, fall upon the terrestrial equator; and the magnetic and geographic meridians would also coincide, and the needle, in all places, would point duly north and south; moreover, a needle upon the equator would, in that case, be equally distant, and under equal influence from both poles, or rather from both centres, and would, therefore, have no dip or inclination.

"We know, however, that the needle does not everywhere point duly north and south, and that the circle on the globe, in which the needle has no inclination, is not coincident with the terrestrial equator."—*Br.*

[7] *would at last endeavour to erect itself.*] The phænomena thus predicted by the author from his (theoretically) correct reasoning, is actually found to occur.

Mr. Barlow gives a table containing the computed situation of the magnetic north pole of the earth, derived from twenty-three sets of observations on the dip, in different places, the results of

this is no more than what it doth upon the loadstone, and that more plainly upon the terrella or spherical magnet cosmographically set out with circles of the globe. For at the equator thereof, the needle will stand rectangularly; but approaching northward toward the tropic it will regard the

those observations themselves being also given. From this it appears that Capt. Parry found the dip, at Melville Island, (N. Lat. 74° 47′, W. Long. 110° 48′,) to be 88° 43′, deviating only 1° 17′ from the vertical position or 90°. Sir John Franklin observed a still closer approximation; finding the dip, in North America (N. Lat. 68° 18′, W. Long. 109° 25′) to be 89° 31′, or within less than half a degree of 90°. But the positions of the north magnetic pole computed from these observations differ; Capt. Parry's indicating it to be situated in N. Lat. 73° 12′, W. Long. 102° 46′, and Capt. Franklin's in N. Lat. 68° 50′ and W. Long. 107° 33′; while Mr. Barlow has more recently computed (*Phil. Trans.* 1831, p. 105) from the mean results of the observations of Capt. Parry and the late Capt. Foster, that the position of the magnetic axis is in N. and S. Lat. 72° and corresponding to W. Long. 76°. But further observations have been made in the last voyage of Capt. Ross, an account of which, by Commander J. C. Ross, was read before the Royal Society on the 19th December last, of which the following is an abstract, as given in the *Proceedings of the Royal Society*. "The author remarks that the discordances in former observations, made with a view to determine the position of the magnetic pole, have arisen partly from the irregularity of distribution in the earth of the substances which exert magnetic power, and partly from the great distances from the magnetic poles at which these observations have been made. The latter cause of uncertainty has been now, in a great measure, removed, by the numerous and accurate observations made during the late arctic expeditions. The object of the present paper is to put on record those which were made in the last voyage of Capt. Ross, in which a spot was reached corresponding to the true north magnetic pole on the surface of the earth. The nature of the instruments, and the difficulties encountered in their practical employment, under the circumstances of the expedition, are fully stated. Having arrived, on the 1st of June, at N. Lat. 70° 5′ 17″, and W. Long. 96° 45′ 48″, the horizontal magnetic needle exhibited no determinate directive tendency, and the dipping needle was within a minute of the vertical position, a quantity which may be supposed to come within the limits of the errors of observation; hence the author concludes that this spot may be considered as the true magnetic pole, or as a very near approximation to it, as far, at least, as could be ascertained with the limited means of determination of which he was then in possession." The following extract from Mr. Barlow's treatise, already referred to, will explain the apparent anomalies just described, and thus complete that general view of the subject which will enable the reader fully to appreciate our author's views and statements respecting it.

"On these results it may be observed that, although in determinations relative to the dip and variation of the needle, we cannot expect the utmost accuracy, yet it is very obvious from the preceding table, that the aberrations in the latitude and longitude of the magnetic pole are much greater than can be attributed to errors of observation. It will be seen that the place assigned to it differs in longitude as much as 57° between one set of observations and another, and as much as 14° in latitude. It will also be observed, that the more we approach the north and west, the more westerly we find the place of the pole; and the more easterly the place of observation, the greater is its latitude. In short, it is evident, from the few examples we have taken, that every place has its particular polarizing axis, which, probably in all cases, falls within the arctic circle; but that this is the narrowest limit we are able to assign; that is, the local attraction or particular influence which the compass in every place is under, besides that of the general directive power of the globe, is such, as to displace the needle so much from its natural direction, *as to give a different pole to almost every different set of observations*; so that instead of

stone obliquely, and when it attaineth the pole, directly; and if its bulk be no impediment, erect itself and stand perpendicularly thereon. And therefore, upon strict observation of this inclination in several latitudes and due records preserved, instruments are made, whereby, without the help of sun or star, the latitude of the place may be discovered. And yet it appears the observations of men have not as yet been so just and equal as is desirable, for, of those tables of declination which I have perused, there are not any two that punctually agree; though some have been thought exactly calculated, especially that which Ridley received from Mr. Briggs, in our time geometry professor in Oxford.

It is also probable, what is delivered concerning the variation of the compass, that is, the cause and ground thereof; for the manner, as being confirmed by observation, we shall not at all dispute. The variation of the compass is an arch of the horizon intercepted between the true and magnetical meridian; or more plainly, a deflexion and siding east and west from the true meridian. The true meridian is a major circle passing through the poles of the world, and the zenith or vertex of any place, exactly dividing the east from the west. Now on this line the needle exactly lieth not, but diverts and varieth its point, that is, the north point on this side the equator, the south on the other; sometimes unto the east, sometimes towards the west, and in some few places varieth not at all. First, therefore, it is observed that, betwixt the shores of Ireland, France, Spain, Guinea, and the Azores, the north point varieth toward the east, and that in some variety; at London it varieth eleven degrees, at Antwerp nine, at Rome but five: at some part of the Azores it deflecteth not, but lieth in the true meridian; on the other side of the Azores, and this side of the equator, the north point of the needle wheeleth to the west; so that in the latitude of thirty-six, near the shore, the variation is about eleven de-

the magnetism of the earth possessing that degree of uniformity which appertains to a perfectly formed iron ball, it may rather be said to resemble that species of action which we might expect to find in an irregularly formed mass of iron, approximating in its general character to that of a globe, but not perfectly such."—*Br.*

grees; but on the other side the equator, it is quite otherwise: for about Capo Frio in Brazil, the south point varieth twelve degrees unto the west, and about the mouth of the Straits of Magellan five or six; but, elongating from the coast of Brazil toward the shore of Africa, it varieth eastward, and arriving at Capo de las Agullas, it resteth in the meridian, and looketh neither way.

Now the cause of this variation was thought by Gilbertus to be the inequality of the earth, variously disposed, and differently intermixed with the sea: withal the different disposure of its magnetical vigor in the eminences and stronger parts thereof. For the needle naturally endeavours to conform unto the meridian; but, being distracted, driveth that way where the greater and powerfuller part of the earth is placed. Which may be illustrated from what hath been delivered before, and may be conceived by any, that understands the generalities of geography. For whereas on this side the meridian, or the isles of Azores, where the first meridian is placed, the needle varieth eastward; it may be occasioned by that vast tract of earth, that is, of Europe, Asia, and Africa, seated toward the east, and disposing the needle that way. For arriving at some part of the Azores, or islands of Saint Michael, which have a middle situation between these continents, and that vast and almost answerable tract of America, it seemeth equally distracted by both; and diverting unto neither, doth parallel and place itself upon the true meridian. But, sailing farther, it veers its lily to the west, and regardeth that quarter wherein the land is nearer or greater, and in the same latitude, as it approacheth the shore, augmenteth its variation. And therefore as some observe, if Columbus, or whoever first discovered America, had apprehended the cause of this variation, having passed more than half the way, he might have been confirmed in the discovery, and assuredly foretold there lay a vast and mighty continent toward the west. The reason I confess and inference is good, but the instance perhaps not so. For Columbus knew not the variation of the compass, whereof Sebastian Cabot first took notice, who after made discovery of the northern part of that continent. And it happened, indeed, that part of America was

first discovered, which was on this side farthest distant, that is, Jamaica, Cuba, and the isles in the bay of Mexico. And from this variation do some new discoverers deduce a probability in the attempts of the northern passage toward the Indies.

Now, because, where the greater continents are joined, the action and effluence is also greater, therefore those needles do suffer the greatest variation which are in countries which most do feel that action. And therefore, hath Rome far less variation than London, for on the west side of Rome are seated the great continents of France, Spain, Germany, which take off the exuberance, and in some way balance the vigor of the eastern parts. But unto England there is almost no earth west, but the whole extent of Europe and Asia lieth eastward; and therefore at London it varieth eleven degrees, that is, almost one rhumb. Thus, also, by reason of the great continent of Brazil, Peru, and Chili, the needle deflecteth toward the land twelve degrees; but at the Straits of Magellan, where the land is narrowed, and the sea on the other side, it varieth but five or six. And so likewise, because the Cape de las Agullas hath sea on both sides near it, and other land remote, and, as it were, equidistant from it, therefore at that point the needle conforms unto the true meridian, and is not distracted by the vicinity of adjacencies. This is the general and great cause of variation. But, if in certain creeks and vallies the needle prove irregular, and vary beyond expectation, it may be imputed unto some vigorous part of the earth, or magnetical eminence not far distant. And this was the invention of D. Gilbert,[8] not many years past, a physician in London. And therefore, although some assume the invention of its direction, and other have had the glory of the card, yet in the experiments, grounds, and causes thereof, England produced the father philosopher,

[8] *Gilbert, &c.*] Herschel (in his Preliminary Discourse) says, "Our countryman, Dr. Gilbert, of Colchester, in 1500, published a treatise on magnetism, full of valuable facts and experiments, ingeniously reasoned on; and he likewise extended his enquiries to a variety of other subjects, in particular to electricity."

The title of this work, which is now very scarce, is *Gulielmi Gilberti Colcestrensis, Medici Londinensis, De Magnete, Magneticisque corporibus, et de magno magnete tellure; physiologia nova, plurimis et argumentis et experimentis demonstrata:* fol. pp. 240, Londini, 1500.

and discovered more in it, than Columbus or Americus did ever by it.

Unto this, in great part true, the reason of Kircherus may be added: that this variation proceedeth, not only from terrestrious eminences and magnetical veins of the earth, laterally respecting the needle, but the different coagmentation of the earth disposed unto the poles, lying under the sea and waters, which affect the needle with great or lesser variation, according to the vigour or imbecility of these subterraneous lines, or the entire or broken compagination of the magnetical fabric under it. As is observable from several loadstones placed at the bottom of any water; for a loadstone or needle upon the surface will variously conform itself, according to the vigour or faintness of the loadstones under it.

Thus also a reason may be alleged for the variation of the variation, and why, according to observation, the variation of the needle hath after some years been found to vary in some places. For this may proceed from mutations of the earth, by subterraneous fires, fumes, mineral spirits, or otherwise; which altering the constitution of the magnetical parts, in process of time, doth vary the variation over the place.[9]

It is also probable, what is conceived of its antiquity, that the knowledge of its polary power and direction unto the north was unknown unto the ancients, and (though Levinus Lemnius, and Cælius Calcagninus, are of another belief), is justly placed with new inventions by Pancirollus. For their Achilles and strongest argument is an expression in Plautus, a very ancient author and contemporary unto Ennius. *Hic ventus jam secundus est, cape modo versoriam.* Now this *versoriam* they construe to be the compass, which, notwithstanding, according unto Pineda, who hath discussed the point, Turnebus,[1] Cabeus, and divers others, is better interpreted the rope that helps to turn the ship, or, as we say, doth make it tack about; the compass declaring rather the ship is turned, than conferring unto its conversion. As for the long expeditions and sundry voyages of elder times which might confirm the antiquity of this invention, it is not

[9] *Unto this, &c.*] These two paragraphs were added in the 2nd edition.

[1] *Turnebus.*] Otherwise *Turnbull*, whose father was a Scotchman.—*Jeff.*

improbable[2] they were performed by the help of stars; and so might the Phœnicean navigators, and also Ulysses, sail about the Mediterranean, by the flight of birds, or keeping near the shore; and so might Hanno coast about Africa, or, by the help of oars, as is expressed in the voyage of Jonah. And, whereas, it is contended that this verticity was not unknown unto Solomon, in whom is presumed an universality of knowledge, it will as forcibly follow, he knew the art of typography, powder, and guns, or had the philosopher's stone, yet sent unto Ophir for gold. It is not to be denied, that, besides his political wisdom, his knowledge in philosophy was very large; and perhaps from his works therein, the ancient philophers, especially Aristotle, who had the assistance of Alexander's acquirements, collected great observables. Yet, if he knew the use of the compass, his ships were surely very slow, that made a three years' voyage from Eziongeber in the Red Sea unto Ophir, which is supposed to be Taprobana or Malacca in the Indies, not many months' sail;[3] and since, in the same or lesser time, Drake and Cavendish performed their voyage about the earth.

And, as the knowledge of its verticity is not so old as some conceive, so is it more ancient than most believe, nor had its discovery with guns, printing, or as many think, some years before the discovery of America; for it was not unknown unto Petrus Peregrinus, a Frenchman, who, two hundred years since,[4] left a tract of the magnet, and a perpetual motion

2 *improbable.*] Ross reads *probable*, and so indulges in a long discourse to refute the position.

3 *a three year's voyage, &c.*] That the voyage from Eziongeber to Ophir occupied three years is by no means to be inferred from the expressions used by the sacred historian: see 1 Kings x, 22; 2 Chron. ix, 21.

If, in his identification of the ancient *Taprobane* with Malacca, Sir Thomas may be supposed to have included the adjacent islands of Sumatra, Borneos, and Java, which is extremely probable, his opinion is supported by the high authority of Sir T. Stamford Raffles; though other modern geographers have considered it to be Ceylon.

The true situation of *Ophir*, however, has been the subject of very many conflicting hypotheses. One of the most recent, and perhaps most probable, is that of Mr. C. T. Beke, who supposes it to have been situated at the northern extremity of the Persian gulph. See his *Origines Biblicæ*, vol. i, p. 114.

4 *two hundred years since.*] The knowledge of the directive power or polarity of the magnet, is now known to be of a date considerably earlier than this. Sir John F. W. Herschel, in his *Preliminary Discourse on the Study of Natural Philosophy*, p. 326, thus concisely states the present amount of our information on the subject: "It does not appear that the ancients had any knowledge of this property of the magnet, though its attraction of iron was well-known to them.

to be made thereby, preserved by Gasserus. Paulus Venetus, and, about five hundred years past, Albertus Magnus, make mention hereof, and quote for it a book of Aristotle, *De Lapide;* which book, although we find in the catalogue of Laertius, yet, with Cabeus, we may rather judge it to be the work of some Arabic writer, not many years before the days of Albertus.

Lastly, it is likewise true, what some have delivered of *crocus Martis*, that is, steel corroded with vinegar, sulphur, or otherwise, and after reverberated by fire. For the loadstone will not at all attract it, nor will it adhere, but lie therein like sand.[5] This is to be understood of *crocus Martis* well reverberated, and into a violet colour; for common

The first mention of it in modern times, cannot be traced earlier than 1180, though it was probably known to the Chinese before that time." The following passage from the late Professor Sir John Leslie's Dissertation on the Progress of Mathematical and Physical Science, prefixed to the seventh edition of the Encyclopædia Britannica, gives a more circumstantial view of the history of the compass, which is further interesting, when contrasted with the previous passage of the text, as showing that the notions respecting the antiquity of the knowledge of magnetic polarity, which are therein contemned by Browne, have been revived and supported by high modern authority. "The magnetic compass, with the art of distillation, which was never practised by the ancient Greeks or Romans, seems to have been discovered in Upper Asia, and thence communicated by their Tartarian conquerors, to the Chinese. From them again, the knowledge of the invention spread gradually over the East. The Crusaders, during the occupation of their bloody conquests in those regions, had leisure to admire the arts acquired by their more civilized rivals. Having their curiosity thus awakened, they appear, about the latter part of the twelfth century, to have imported into Europe the *compass*, along with the substance which, mistaking it for *natron*, they called *saltpetre*, and of which they had learned the deflagrating property. That invaluable instrument was at first very rudely formed, consisting merely of a piece of the native mineral fixed to a broad cork, and set to float in a dish of water. An artist, of the opulent town of Amalphi, the great emporium of the east, and seated on the shore of Calabria, in the direct route of the Crusaders, improved the construction, and marked the north point by a *fleur-de-lis*, the armorial bearing of the kingdom of Naples. From its directive property, it was now called in English, the *loadstone*, or *leading-stone.—Br.*

[5] *but lie therein like sand.*] Some explanatory remarks are requisite in this place. The *crocus martis* described by the author, is the *peroxide* of iron of modern chemists, that is, iron combined with the greatest proportion of oxygen with which it is capable of uniting, in which state of combination the metal ceases to obey the magnetic influence. But the "common *chalybs præparatus*," which he afterwards mentions, consists merely of steel, in which the metal retains, in great measure, its metallic form, but is mixed and disguised with variable proportions of its oxides, and chiefly of the *black oxide*, and this, containing less oxygen than the peroxide, is like the unoxidated metal attracted by the magnet; which explains why this preparation is attracted by "the loadstone,".... "like ordinary filings of iron." While the "flakes of iron that are rusty," &c. adverted to at the conclusion of the paragraph, are only in the state of black oxide, they also obey the magnet; but when they have acquired their full dose of oxygen, and thus become peroxide, "their cognation then expireth, and the loadstone will not regard them."—*Br.*

chalybs præparatus, or corroded and powdered steel, the loadstone attracts, like ordinary filings of iron, and many times most of that which passeth for *crocus Martis*. So that this way may serve as a test of its preparation, after which, it becometh a very good medicine in fluxes. The like may be affirmed of flakes of iron that are rusty and begin to tend unto earth; for their cognation then expireth, and the loadstone will not regard them.

And therefore, this may serve as a trial of good steel,[6] the loadstone taking up a greater mass of that which is most pure. It may also decide the conversion of wood into iron, as is pretended, from some waters; and the common conversion of iron into copper, by the mediation of blue copperas; for the loadstone will not attract it. Although it may be questioned, whether, in this operation, the iron or copperas be transmuted,[7] as may be doubted from the cognation of copperas with copper, and the quantity of iron remaining

[6] *as a trial of good steel.*] This statement is no further true than that the magnet, if caused to act upon filings of iron or steel in which the metal fully retained its metallic form, free from oxidation, and also upon similar filings which had become partially oxidated, would attract a greater quantity of the former than of the latter. As a trial of the purity or goodness of iron or steel in the mass, the proposed test is quite nugatory.—*Br.*

[7] *whether in this operation the iron or copperas be transmuted.*] This alleged conversion of iron into copper is an experiment of the alchymists and of the old chemists their successors; the true nature of which has been explained by modern chemists, and appears, from the passage before us, to have been suspected also by Browne. The metallic salt, here termed "blue copperas," (or blue vitriol, as it is also called,) is properly a *hydrated persulphate of copper*,—a combination of the peroxide of that metal with the sulphuric acid and with water. But iron, having a stronger chemical attraction for oxygen than copper has, when immersed in a solution of this salt, attracts and unites with the oxygen of a part of the peroxide of copper, thus separating an equivalent quantity of the copper itself, which being precipitated, in its pure metallic state, upon the iron, imparts to it externally, the appearance of copper, just as gilding would impart that of gold. It was formerly imagined, however, (and the experiment was cited as demonstrating the transmutability of metals into one another,) that part of the iron was actually converted into copper. But our author, knowing the "cognation of [blue] copperas with copper," and considering "the quantity of iron remaining after the conversion," justly questions whether the iron or the "copperas" "be transmuted." It is evident from this, that he entertained as correct a notion upon the subject as it was possible to arrive at in the existing state of chemical knowledge; for, although in reality a particle of iron becomes dissolved in the solution for every particle of copper which is precipitated from it, yet, in the manner in which the experiment is commonly made, and as it was always made formerly, the iron is not sensibly diminished in substance, and continues unaltered in form, so that the obvious essential change takes place with the metallic salt only. The last sentence of the first period alluding to this subject would be more readily intelligible, were it read "for the loadstone will not attract *the copperas*."—*Br.*

after the conversion. And the same may be useful to some discovery concerning vitriol or copperas of *Mars*,[8] by some called salt of steel, made by the spirits of vitriol or sulphur. For the corroded powder of steel will, after ablution, be actively attracted by the loadstone, and also remaineth in little diminished quantity; and therefore, whether those shooting salts partake but little of steel, and be not rather the vitriolous spirits fixed into salt by the effluvium or odor of steel, is not without good question.[9]

CHAPTER III.

Concerning the Loadstone; a rejection of sundry common opinions and relations thereof; natural, medical, historical, magical.

And first, not only a simple heterodox, but a very hard paradox, it will seem, and of great absurdity unto obstinate ears, if we say, attraction is unjustly appropriated unto the loadstone, and that perhaps we speak not properly, when we say vulgarly and appropriately, the loadstone draweth iron; and yet herein we should not want experiment and great authority. The words of Renatus des Cartes, in his *Principles of Philosophy*, are very plain. *Præterea magnes trahit ferrum,*

8 *some discovery concerning vitriol or copperas of Mars.*] The salt here alluded to, commonly termed *green vitriol*, is the *hydrated protosulphate of iron*,—a combination of the protoxide of iron with the sulphuric acid and with water, bearing nearly the same relation to metallic iron which *blue vitriol* bears to metallic copper. The manner in which Browne adverts to these substances, evinces that he entertained approximately correct ideas respecting the nature of the several salts termed *copperas*. But when he supposes that "those shooting salts," (meaning thereby the hydrated protosulphate of iron,) "partake but little" of the metal from which they are formed, he is entirely mistaken. He appears to have been led into this error by the application of his own proposed magnetic test: finding that the "corroded powder of steel," the nature of which is explained in our preceding note, was readily attracted by the magnet, but that the "copperas of Mars" was not, he seems to have inferred that that salt could not be materially related to the metal from which it is formed; not knowing that those substances which obey the magnet in their metallic state, and in some instances in their oxidated form also, cease to be amenable to its influence when united with acids into *salts*.—*Br.*

9 *And therefore, &c.*] Added in 2nd edition.

sive potiùs magnes et ferrum ad invicem accedunt, neque enim ulla ibi tractio est. The same is solemnly determined by Cabeus. *Nec magnes trahit propriè ferrum, nec ferrum ad se magnetem provocat; sed ambo pari conatu ad invicem confluunt.* Concordant hereto is the assertion of Dr. Ridley, physician to the emperor of Russia, in his tract *Of Magnetical Bodies,* defining magnetical attraction to be a natural incitation and disposition conforming unto contiguity, an union of one magnetical body with another, and no violent haling of the weak unto the stronger. And this is also the doctrine of Gilbertus, by whom this motion is termed coition, and that not made by any faculty attractive of one, but a *syndrome* and concourse of each,[1] a coition always of their vigours, and also of their bodies, if bulk or impediment prevent not. And therefore, those contrary actions, which flow from opposite poles or faces, are not so properly expulsion and attraction, as *sequela* and *fuga*, a mutual flight and following. Consonant whereto are also the determinations of Helmontius, Kircherus, and Licetus.[2]

The same is also confirmed by experiment; for if a piece of iron be fastened in the side of a bowl or basin of water, a loadstone, swimming freely in a boat of cork, will presently make unto it. So if a steel or knife untouched be offered toward the needle that is touched, the needle nimbly moveth toward it, and conformeth unto a union with the steel that moveth not. Again, if a loadstone be finely filed, the atoms or dust thereof will adhere unto iron that was never touched, even as the powder of iron doth also unto the loadstone. And, lastly, if in two skiffs of cork, a loadstone and steel be placed within the orb of their activities, the one doth not move, the other standing still, but both hoist sail and steer unto each other. So that if the loadstone attract, the steel hath also its attraction; for in this action the alliciency is reciprocal, which jointly felt, they mutually approach and run into each other's arms.

[1] *concourse of each.*] Ross, on the ground that "no end can be assigned why the loadstone should move towards the iron," denies that they move towards each other; thinking it more reasonable to suppose that iron *and other metals* move towards the loadstone as to their matrix.—*Arcana*, p. 191.

[2] *Consonant, &c.*] Added in the 2nd edition.

And therefore, surely, more moderate expressions become this action, than what the ancients have used; which some have delivered in the most violent terms of their language; so Austin calls it, *mirabilem ferri raptorem:* Hippocrates, λίθος ὅ τι τὸν σίδηρον ἁρπάζει, *lapis qui ferrum rapit.* Galen, disputing against Epicurus, useth the term ἕλκειν, but this also is too violent; among the ancients, Aristotle spake most warily, λίθος ὅστις τὸν σίδηρον κινεῖ, *lapis qui ferrum movet:* and in some tolerable exception do run the expressions of Aquinas, Scaliger and Cusanus.

Many relations are made, and great expectations are raised from the *magnes carneus*, or a loadstone that hath a faculty to attract not only iron, but flesh; but this, upon enquiry, and as Cabeus hath also observed, is nothing else but a weak and inanimate kind of loadstone, veined here and there with a few magnetical and ferreous lines, but chiefly consisting of a bolary and clammy substance, whereby it adheres like *hæmatites*, or *terra Lemnia*, unto the lips. And this is that stone which is to be understood, when physicians join it with *ætites*, or the eagle-stone, and promise therein a virtue against abortion.

There is sometimes a mistake concerning the variation of the compass, and therein one point is taken for another. For beyond the equator some men account its variation by the diversion of the northern point; whereas, beyond that circle, the southern point[3] is sovereign, and the north submits his preeminency. For in the southern coast, either of America or Africa, the southern point deflects and varieth toward the land, as being disposed and spirited that way by the meridional and proper hemisphere. And, therefore, on that side of the earth, the varying point is best accounted by the south. And therefore, also, the writings of some, and maps of others, are to be enquired, that make the needle decline unto the east twelve degrees at Capo Frio, and six at the straits of Magellan; accounting hereby one point for another, and

[3] *beyond that circle, &c.*] The author was here much mistaken: the southern pointe having noe soveranty at all—noe not in the southern clymats, as our navigators unanimously affirme.—*Wr.* The dean's contradiction must be flatly thrown back upon him. The fact is found to bear out our author's assertion, which is correct both as to substance and literality.

preferring the north in the liberties and province of the south.[4]

But certainly false it is, what is commonly affirmed and believed, that garlick doth hinder the attraction of the loadstone;[5] which is, notwithstanding, delivered by grave and worthy writers, by Pliny, Solinus, Ptolemy, Plutarch, Albertus, Matthiolus, Rueus, Langius, and many more. An effect as strange as that of Homer's *Moly*, and the garlic that Mercury bestowed upon Ulysses. But that it is evidently false, many experiments declare. For an iron wire heated red hot and quenched in the juice of garlick, doth, notwithstanding, contract a verticity from the earth, and attracteth the southern point of the needle. If, also, the tooth of a loadstone be covered or stuck in garlick, it will, notwithstanding, attract; and needles, excited and fixed in garlic, until they begin to rust, do yet retain their attractive and polary respects.

Of the same stamp is that which is obtruded upon us by authors ancient and modern, that an adamant or diamond prevents or suspends the attraction of the loadstone; as is in open terms delivered by Pliny: *Adamas dissidet cum magnete lapide, ut juxtà positus ferrum non patiatur abstrahi, aut si admotus magnes apprehenderit, rapiat atque auferit.* For if a diamond be placed between a needle and a loadstone, there will, nevertheless, ensue a coition even over the body of the diamond. And an easy matter it is to touch or excite a needle through a diamond, by placing it at the tooth of a loadstone: and, therefore, the relation is false; or our estimation of these gems untrue,[6] nor are they diamonds which carry that name amongst us.

[4] *and preferring, &c.*] Itt is certaine that the needle holds the same posture to the northe, and moves to iron on the south side the line, in the self-same manner as itt did being toucht in England, and that the south pointe of the needle does [there] fly from iron as itt does here.—*Wr.*

[5] *garlick doth hinder, &c.*] Nothing can afford a more perfect example of implicit adherence to antiquity, than the following passage from Ross:—"I cannot think the ancient sages would write so confidently of that which they had no experience of, being a thing so obvious and easy to try; therefore I suppose they had a *stronger kind of garlick than is with us!*"—*Arcana*, p. 192.

[6] *and therefore the relation, &c.*] The paragraph containing this result, the preceding, and the two following ones, all furnish examples of Browne's rigorous experimental scrutiny of the statements made by authors: in the present instance, as in all others adverted to in these paragraphs, "the relation is false," the discrepancy not arising from any error relative to the diamond, although several substances are probably confounded together under that appellation, by Pliny.—*Br.*

It is not suddenly to be received what Paracelsus * affirmeth, that if a loadstone be anointed with mercurial oil, or only put into quicksilver, it amitteth its attraction for ever. For we have found that loadstones and touched needles, which have laid long time in quicksilver, have not amitted their attraction. And we also find that red hot needles or wires, extinguished in quicksilver, do yet acquire a verticity according to the laws of position in extinction. Of greater repugnancy unto reason is that which he delivers concerning its graduation, that heated in the fire and often extinguished in oil of Mars or iron, it acquires an ability to extract or draw forth a nail fastened in a wall; for, as we have declared before, the vigour of the loadstone is destroyed by fire; nor will it be re-impregnated by any other magnet than the earth.[7]

Nor is it to be made out, what seemeth very plausible, and formerly hath deceived us, that a loadstone will not attract an iron or steel red hot.[8] The falsity hereof, discovered first by Kircherus, we can confirm by iterated experiment; very sensibly in armed loadstones, and obscurely in any other.

True it is, that, besides fire, some other ways there are of its destruction; as age, rust, and, what is least dreamt on, an unnatural or contrary situation. For, being impolarily adjoined unto a more vigorous loadstone, it will in a short time exchange its poles; or, being kept in undue position, that is, not lying on the meridian, or else with its poles inverted, it receives in longer time impair in activity, exchange of faces; and is more powerfully preserved by position than by the dust of steel. But the sudden and surest way is fire; that is, fire not only actual but potential; the one surely and suddenly, the other slowly and imperfectly; the one changing, the other destroying the figure. For if distilled vinegar or *aqua fortis* be poured upon the powder of loadstone, the subsiding powder dried, retains some magnetical virtue, and will be attracted by the loadstone; but if the *menstruum* or dis-

* *De generatione rerum.*

7 *nor will it be re-impregnated, &c.*] This is untrue, if understood of an artificial magnet, which may readily be re-magnetized by the usual means, after being deprived of its magnetism by heat; but the statement is probably true, if understood of the natural loadstone, or magnetic iron ore.—*Br.*

8 *Nor is it, &c.*] Added in the 2nd edition.

solvent be evaporated to a consistence, and afterward doth shoot into icicles or crystals, the loadstone hath no power upon them; and if in a full dissolution of steel, a separation of parts be made by precipitation or exhalation, the exsiccated powder hath lost its wings, and ascends not unto the loadstone. And though a loadstone fired doth presently amit its proper virtue, and according to the position in cooling contracts a new verticity from the earth, yet if the same be laid awhile in *aqua fortis*, or other corrosive water, and taken out before a considerable corrosion, it still reserves its attraction, and will convert the needle according to former polarity. And that, duly preserved from violent corrosion, or the natural disease of rust, it may long conserve its virtue,—beside the magnetical virtue of the earth which hath lasted since the creation, a great example we have from the observation of our learned friend, Mr. Graves,* in an Egyptian idol cut out of loadstone, and found among the mummies, which still retains its attraction, though probably taken out of the mine about two thousand years ago.[9]

It is improbable, what Pliny affirmeth concerning the object of its attraction, that it attracts not only ferreous bodies, but also *liquorem vitri;* for in the body of glass there is no ferreous or magnetical nature which might occasion attraction, For, of the glass we use, the purest is made of the finest sand and the ashes of chaly or glasswort; and the coarser or green sort, of the ashes of brake or other plants. True it is, that in the making of glass, it hath been an ancient practice to cast in pieces of magnet, or, perhaps, manganese, conceiving it carried away all ferreous and earthy parts from the pure and running portion of glass, which the loadstone would not respect; and, therefore, if that attraction were not rather electrical than magnetical, it was a wondrous effect what Helmont delivered concerning a glass wherein the magistery of loadstone was prepared, which after retained an attractive quality.[1]

* In his learned *Pyramidography*.

9 *And that, &c.*] Added in the 2nd edition.

1 *True it is, &c.*] Instead of the rest of this paragraph (thus altered in 2nd edit.) edit. 1646 reads thus:—"Beside vitrification is the last or utmost fusion of

But, whether the magnet attracteth more than common iron, may be tried in other bodies. It seems to attract the *smyris* or emery in powder.[2] It draweth the shining or glassy powder brought from the Indies,[3] and usually employed in writing dust. There is also in smith's cinders, by some adhesion of iron,[4] whereby they appear as it were glazed, sometimes to be found a magnetical operation; for some thereof applied have power to move the needle. But, whether the ashes of vegetables, which grow over iron mines, contract a magnetical quality, as containing some mineral particles, which by sublimation ascend unto their roots, and are attracted together with their nourishment, according, as some affirm from the like observations upon the mines of silver, quicksilver, and gold, we must refer unto further experiment.[5]

of a body vitrifiable, and is performed by a strong and violent heat, which keeps the melted glass red hot. Now certain it is, and we have shewed it before, that the loadstone will not attract even steel itself that is candent, much less the incongenerous body of glass being fired. For fire destroys the loadstone; and therefore it declines in its own defence, and seeks no union with it."

[2] *seems to attract, &c.*] Emery itself, in its natural state a massive and granular variety of corundum, the mineral of which the sapphire and the ruby are also varieties, is not attracted by the magnet; but it is almost always mingled with a considerable proportion of particles of magnetic iron ore (or loadstone) which of course are subject to attraction. By the use of a magnet, indeed, nearly the whole of this may be separated, leaving the emery nearly pure, especially if the mass has previously been reduced into a fine powder. It was by this means that the late accomplished chemical analyst, Mr. Smithson Tennant, separated the magnetic iron ore from the emery, his examination of which first evinced the true nature of that substance as a variety of corundum. See *Phil. Trans.* 1802, p. 399.

The foregoing explanation has been given on the supposition that our author alludes to the mineral properly designated *emery;* but that term has also been applied, in commerce and in the arts, to various other substances, and among them to some of the ores of iron; Browne, therefore, may perhaps allude in reality to some of the latter; but in either case the fact is explained in conformity with the obvious and known properties of the magnet, and without leaving room for any suspicion that other bodies, not properly magnetic, are attractable by it under ordinary circumstances.—*Br.*

[3] *shining or glassy powder, &c.*] This powder consists almost entirely of minute crystals or grains of magnetic iron ore, so that, as in the case of the attractable particles in emery, we have here merely the loadstone or the magnet attracting particles of loadstone itself.—*Br.*

[4] *There is also in smith's cinders, &c.*] The scales which are detached from the surface of iron while undergoing the operations of the smith, consist of the black oxide of that metal, which agrees in its chemical nature with the magnetic iron ore or native loadstone, being composed, like that mineral, of the protoxide and the peroxide of iron united. These scales are of course magnetic, and may be, indeed, what the author alludes to; but should he in reality refer merely to the cinders of the small coal used in the forge, their magnetism may readily be accounted for on the supposition that the scales of black oxide, with which they are so frequently brought into contact, must often become intimately mingled with them by the partial fusion of both. —*Br.*

[5] *But whether the ashes, &c.*] Added in 2nd edition.

It is also improbable and something singular, what some conceive, and Eusebius Nierembergius a learned jesuit of Spain, delivers, that the body of man is magnetical, and, being placed in a boat, the vessel will never rest until the head respecteth the north.[6] If this be true, the bodies of Christians do lie unnaturally in their graves. King Cheops in his tomb, and the Jews in their beds, have fallen upon the natural position; who reverentially declining the situation of their temple, nor willing to lie as that stood, do place their beds from north to south, and delight to sleep meridionally. This opinion confirmed, would much advance the microcosmical conceit and commend the geography of Paracelsus, who, according to the cardinal points of the world, divideth the body of man; and, therefore, working upon human ordure, and by long preparation rendering it odoriferous, he terms it *zibeta occidentalis*, western civet; making the face the east, but the posteriors the America or western part of his microcosm. The verity hereof[7] might easily be tried in Wales, where there are portable boats, and made of leather, which would convert upon the impulsion of any verticity; and seem to be the same whereof, in his description of Britain, Cæsar hath left some mention.[8]

Another kind of verticity is that which *Angelus doce mihi jus,* alias*, Michael Sundevogis, in a tract *De Sulphure*, dis-

* Anagrammatically.

[6] *the vessel, &c.*] How easye it is to sifte out this, and save the dispute.—*Wr.*

[7] *The verity hereof.*] "The verity, or rather falsity hereof."—*Edit.* 1646.

[8] *In Wales, where, &c.*] "The fishermen on the Teivi, and some of the other rivers of Wales, use a boat of a singular construction, called in Welsh *corwg*, and anglicized *coracle*, which is probably co-eval with the earliest population of the island. (See *Cæsar, Bell. Civ.* lib. i, c. 54.) The form of this vessel is nearly oval, flattened at one end like the keel of a common boat: its length is usually from five to six feet, and its breadth about four feet. The frame is formed of split rods, which are plaited like basket-work: these are afterwards covered on the outside with a raw hide, or more commonly with strong coarse flannel, which is rendered water tight by a thick coating of pitch and tar. A narrow board is fastened across the middle: when on the water, this forms the fisherman's seat, whence, with his paddle, he directs his bark at pleasure. They are not adapted to carry more than one person conveniently. When proceeding to their work, or returning, the men fasten these vessels on their backs by means of a leather strap attached to the seat, which they pass round their bodies. Their appearance, when thus equipped, has been aptly compared to that of a large tortoise walking on its hind legs. Their usual weight may be about forty or fifty pounds; but according to an old Welsh adage, *(Llwyth gur ei gorwg,)* it was thought necessary that they should form as heavy a load as the individual could carry, before they would bear him on the water." —*Rees's Beauties of South Wales*, p. 391.

covereth in vegetables, from sticks let fall or depressed under water; which, equally framed and permitted unto themselves, will ascend at the upper end, or that which was vertical in their vegetation; wherein, notwithstanding, as yet, we have not found satisfaction: although, perhaps, too greedy of magnalities, we are apt to make but favourable experiments concerning welcome truths, and such desired verities.

It is also wondrous strange, what Lælius Bisciola reporteth, that if unto ten ounces of loadstone one of iron be added, it increaseth not unto eleven, but weighs ten ounces still. A relation inexcusable in a work of leisurable hours;* the examination being as ready as the relation, and the falsity tried as easily as delivered. Nor is it to be omitted, what is taken up by Cæsius Bernardus, a late mineralogist, and originally confirmed by Porta, that needles touched with a diamond contract a verticity, even as they do with a loadstone, which will not consist with experiment. And, therefore, as Gilbertus observeth, he might be deceived in touching such needles with diamonds, which had a verticity before, as we have declared most needles to have; and so, had he touched them with gold or silver, he might have concluded a magnetical virtue therein.

In the same form may we place Fracastorius his attraction of silver, Philostratus his *Pantarbes*, Apollodorus and Beda their relation of the loadstone that attracted only in the night. But most inexcusable is Franciscus Rueus, a man of our own profession; who, in his discourse of gems mentioned in the Apocalypse, undertakes a chapter of the loadstone. Wherein substantially and upon experiment he scarce delivereth any thing; making long enumeration of its traditional qualities, whereof he seemeth to believe many, and some, above convicted by experience, he is fain to salve as impostures of the devil. But Boëtius de Boot, physician unto Rodolphus the second, hath recompensed this defect; and in his tract, *De Lapidibus et Gemmis*, speaks very materially hereof, and his discourse is consonant unto experience and reason.

As for relations historical, though many there be of less account, yet two alone deserve consideration; the first con-

* *Horæ Subsecivæ.*

cerneth magnetical rocks and attractive mountains in several parts of the earth. The other, the tomb of Mahomet, and bodies suspended in the air. Of rocks magnetical there are likewise two relations; for some are delivered to be in the Indies, and some in the extremity of the north, and about the very pole. The northern account is commonly ascribed unto Olaus Magnus, archbishop of Upsale, who, out of his predecessor, Joannes Saxo, and others, compiled a history of some northern nations; but this assertion we have not discovered in that work of his, which commonly passeth amongst us; and should believe his geography herein no more than that in the first line of his book; when he affirmeth that Biarmia (which is not seventy degrees in latitude) hath the pole for its zenith, and equinoctial for the horizon.

Now, upon this foundation, how uncertain soever, men have erected mighty illations, ascribing thereto the cause of the needle's direction, and conceiving the effluxions from these mountains and rocks invite the lily toward the north. Which conceit, though countenanced by learned men, is not made out either by experience or reason; for no man hath yet attained or given a sensible account of the pole by some degrees. It is also observed the needle doth very much vary as it approacheth the pole; whereas, were there such direction from the rocks, upon a nearer approachment it would more directly respect them. Besides, were there such magnetical rocks under the pole, yet, being so far removed, they would produce no such effect. For they that sail by the isle of Ilua, now called Elba, in the Tuscan sea, which abounds in the veins of loadstone, observe no variation or inclination of the needle; much less may they expect a direction from rocks at the end of the earth. And, lastly, men that ascribe thus much unto rocks of the north, must presume or discover the like magneticals at the south; for in the southern seas, and far beyond the equator, variations are large, and declinations as constant as in the northern ocean.

The other relation, of loadstone mines and rocks[9] in the

[9] *loadstone mines and rocks.*] The author's facts and reasoning, in the preceding paragraphs, relative to the absurd notion that the direction of the magnetic needle is caused by the attraction of magnetical rocks, situated at or near

shore of India, is delivered of old by Pliny; wherein, saith he, they are so placed both in abundance and vigour, that it proves an adventure of hazard to pass those coasts in a ship with iron nails. Serapion, the Moor, an author of good esteem and reasonable antiquity, confirmeth the same, whose

the north pole of the earth, are equally correct; as also is the evidence of the navigators upon which he decides, in the paragraph now before us, that no rocks exist having the power of drawing the iron nails out of the ships which sail past them. But when he infers, as the marginal note intimates, that therefore, "(probably,) there be no magnetical rocks," he is himself in error, for there are many such, which have a very powerful effect upon the compass needle, in producing a local deviation from its ordinary north and south direction. The known existence of these, in connexion with other circumstances, has probably led to the fabrication of some of the stories just alluded to, respecting rocks and islands of loadstone destroying ships approaching them, by drawing out their bolts and other iron fastenings, or by their attractive force exerted upon the iron, drawing the ships themselves out of their course, and at length detaining them on shore. It may be remarked, by the way, that supposing magnetic rocks to possess sufficient power, and to be capable of exerting it to such distances as these stories imply, the latter would be the effect that would really happen; the former, under any supposition, would be impossible: for, not to mention the manner in which the fastenings of ships must necessarily be interlaced with each other, and with the timbers, the adhesion of wood to iron nails, screws, and bolts, is so powerful, that the *vis inertiæ* and weight of the vessel would yield to it, and the vessel itself, by the aggregate magnetic attraction upon all the separate masses of iron which it contained, would be drawn towards, and finally affixed to the rock.

In some of these stories, however, this, which is the only possible effect of such a power of attraction as they suppose, is actually related, as will appear from the subjoined extracts from Hole's "Remarks on the Arabian Nights' Entertainments," an elegant and ingenious commentary on those marvellous narratives, in which many of the incidents, which occur in them, are illustrated in a very satisfactory and interesting manner.

"The account of vessels being wrecked by the attractive power of a magnetic rock, appears to have been a long established opinion in the eastern world. In the history of the Third Calendar, (in the Arabian Nights,) we meet with a mountain of adamant, possessing the same properties: and Aboulfoneris, the Sinbad of the Persian Tales, is wrecked by means of a magnetic rock; for that must be intended by a mountain which resembled polished steel, and which, by virtue of a talisman, rendered every vessel that approached it stationary and immoveable." After making these observations, Mr. Hole cites our author's quotation from Serapion, and then proceeds as follows: "It is not probable that Mandeville ever saw Serapion, yet he gives the same account: 'In an isle clept Crues, ben schippes withouten nayles of iren, or bonds, for the rockes of the adamandes; for they ben alle fulle there aboute in that see, that it is marveyle to spaken of. And gif a schipp passed by the marches, and hadde either iren bandes or iren nayles, anon he sholde ben perishet. For the adamande of this kinde draws the iren to him; and so wolde it draw to him the schipp, because of the iren; that he sholde never departen fro it, ne never go thens.'" It is proper to state, that these extracts are taken from a review of Mr. Hole's book, in the European Magazine for December, 1798, vol. xxxiv, pp. 395, 396.

In order fully to illustrate our author's allusions to magnetic rocks, we must now proceed to give a concise account of some of the most remarkable of those rocks which are at present known, and of their properties, with a reference also to some of his previous observations on magnetic bodies. It will be appropriate to commence this with a notice of the rocks of Magnesia, in Asia Minor, a locality of the loadstone well known to the ancients, and from which that substance is said to have derived the name of *magnes*, or "magnet," now extended to bodies ar-

expression in the word *magnes* is this:—"The mine of this stone is in the sea-coast of India, whereto when ships approach, there is no iron in them which flies not like a bird unto those mountains; and, therefore, their ships are fastened not with iron but wood, for otherwise they would be

tificially magnetised, and in fact often applied to them emphatically, in contradistinction from the natural magnet, loadstone, or magnetic iron ore. A particular account of these rocks of Magnesia, by Dr. Yates, was submitted, not long since, to the Philosophical Society of Cambridge: the important facts, as given in the substance of Dr. Yates' paper, published in the Athenæum, for January 4th, 1834, are as follows:

"The ancient town of Magnesia, in Asia Minor, (the supposed origin of the term "magnet,") stands at the base of mount Sipylus..... The rocky heights of mount Sipylus are remarkable for their extraordinary influence over the mariner's compass.....We ascended the castle hill, a part of the Sipylus range. Having proceeded about a quarter of an hour, a little to the westward of the castle, we took the first observation, in order to determine the bearing of a sugar-loaf mountain, which was beyond the river Hermus, (probably a part of the range of mount Temnus.) We found it to be two degrees westward of north. As yet, the compass indicated no change. Ascending in the same direction, we took very numerous observations, keeping always as a fixed point, the sugar-loaf mountain. At length the compass was found to vary 12 degrees *easterly*, and the variation continued to increase gradually in the same course, until it amounted to 56 degrees *easterly*. A short time before we approached the summit, the needle began to recede, and was suddenly attracted to the south-west. It was evident there must be some powerful cause for the change, and, in proportion as we advanced, the degree of variation *diminished*, from which we inferred that the great source of attraction was *now* behind us; we, therefore, retraced our steps, and immediately there was a corresponding change in the compass. We forthwith set ourselves to explore the district: the variation went on steadily increasing, until we approached a mass of dark rock, which had a most astonishing influence over the instrument, which was no sooner placed upon it, than it became considerably agitated, and trembled as if drawn from its course *downwards*, by a powerful magnetic source *beneath the surface:* on placing the needle on the ground, either at our feet, or a few yards off, the effect produced was the same: it did not point to the rock, but fairly dipped; it *trembled*, and was *drawn down* as before, and only returned to its former variation, as we retired from the spot; from which we concluded that the phænomenon did not depend on the mass in question, but on something *below the surface:* besides, we carried home portions of the rock, but did not find that they exhibited any magnetic power.

"On quitting this remarkable spot, the needle ceased to tremble, and gradually returned to its previous degree of variation. Our ascent had been westerly; we went nearly to the summit of the mountain, where nothing particular was noticed, and afterwards we descended by a path to the eastward of the castle..... The compasses sustained no injury: we had taken two with us, in order to compare the results—one of them was smaller than the other, and, of course, more sensibly affected. The rocks of the whole district contained a great deal of iron in various states of oxydation."

"The mountainous parts about Magnesia," says Chishull, (Travels in Turkey, 1747,) "were anciently famous for the production of the loadstone, though, indeed, it is disparaged by Pliny, and accounted less attractive than that of other places. However, this probably was the city, from whence, as Lucretius says, that stone took the name of magnet: as, from the whole country of Lydia, the touchstone likewise was called *lapis Lydius*. This hint gave us the curiosity to carry a sea compass up the castle hill, where we had the satisfaction to see it point to different stones, and quickly after entirely to lose its whole virtue; two effects which are natural to the magnetic needle when injured by the near-

torn to pieces." But this assertion, how positive soever, is contradicted * by all navigators that pass that way, which are now many, and of our own nation; and might surely have been controlled by Nearchus, the admiral of Alexander, who, not knowing the compass, was fain to coast that shore.

For the relation concerning Mahomet, it is generally believed his tomb, at Medina Talnabi, in Arabia, without any visible supporters, hangeth in the air between two loadstones artificially contrived both above and below; which conceit is fabulous and evidently false, from the testimony of ocular testators, who affirm his tomb is made of stone, and lieth upon the ground; as (besides others) the learned Vossius observeth, from Gabriel Sionita and Joannes Hefronita, two Maronites, in their relations hereof. Of such intentions and attempt by Mahometans we read in some relators, and that might be the occasion of the fable, which by tradition of time and distance of place [was] enlarged into the story of being accomplished. And this hath been promoted by attempts of the like nature; for we read in Pliny, that one Dinocrates began to arch the temple of Arsinoe in Alexandria, with loadstone, that so her

* (Probably) there be no magnetical rocks.

ness of other bodies impregnated with the same quality."

Macfarlane tells us, (Constantinople in 1828) that his pocket compass proved the accuracy of Chishull's statement of the magnetic qualities of these mountains. "In several places in my ascent," says he, "I found the needle affected, seeing it tremble and vary from the pole; but, on the summit of the castle hill, to the west, on producing it, it pointed due east, in the direction of a dark mass of rock, which, on examination, offered nothing to distinguish it from the general appearance of the Sipylus; and, rather lower down, behind the castle, in the deep hollow which separates the castle hill from the Sipylus, on placing it on a flat stone, the needle wavered, and stood in succession at nearly every point of the compass, and this suddenly, and as if by jerks, being any thing now rather than an emblem of constancy." The same author also mentions, that the day before his visit to the castle hill, [in] a chasm of mount Sipylus, to the east of Magnesia, near the road which leads to Sardes, he also detected the variations of his pocket compass; but the needle was not affected to such a degree, as on the hill of the Acropolis.

Certain trap rocks in Nova Scotia, recently described by Messrs. Jackson and Alger, in a memoir on the mineralogy and geology of that country, published in the Memoirs of the American Academy of Arts and Sciences, No. VIII, vol. i, p. 223, are magnetic; surveyors who have to run lines in different parts of Digby peninsula, which is occupied by them, find their compasses very sensibly influenced.

Further particulars relating to the action of magnetic rocks upon the compass, will be found in several papers by Dr. Macculloch, published in the Transactions of the Geological Society, especially in a paper on the Geology of Glen Filt. *Trans. Geol. Soc.* vol. iii, p. 324—332. —*Br.*

statue might be suspended in the air to the amazement of the beholders. And, to lead on our credulity herein, confirmation may be drawn from history and writers of good authority. So is it reported by Ruffinus, that in the temple of Serapis there was an iron chariot suspended by loadstones in the air, which stones removed, the chariot fell and dashed into pieces. The like doth Beda report of Bellerophon's horse, which framed of iron, and placed between two loadstones, with wings expanded, hung pendulous in the air.

The verity of these stories we shall not further dispute; their possibility we may in some way determine: if we conceive (what no man will deny) that bodies suspended in the air have this suspension from one or many loadstones placed both above and below it, or else by one or many placed only above it; likewise the body to be suspended in respect of the loadstone above, is either placed first at a pendulous distance in the medium, or else attracted unto that site by the vigour of the loadstone. And so we first affirm, that possible it is a body may be suspended between two loadstones; that is, it being so equally attracted unto both, that it determineth itself unto neither. But surely this position will be of no duration; for if the air be agitated, or the body waved either way, it amits the equilibration, and disposeth itself unto the nearest attractor. Again, it is not impossible (though hardly feasible) by a single loadstone to suspend an iron in the air, the iron being artificially placed, and at a distance guided toward the stone, until it find the neutral point, wherein its gravity just equals the magnetical quality, the one exactly extolling as much as the other depresseth. And lastly, impossible it is, that if an iron rest upon the ground, and a loadstone be placed over it, it should ever so arise as to hang in the way or medium; for that vigour, which at a distance is able to overcome the resistance of its gravity, and to lift it up from the earth, will, as it approacheth nearer, be still more able to attract it; never remaining in the middle that could not abide in the extreme. Now, the way of Baptista Porta, that by a thread fasteneth a needle to a table, and then so guides and orders the same, that by the attraction of the loadstone, it abideth in the air, infringeth not this reason; for this is a vio-

lent retention, and, if the thread be loosened, the needle ascends and adheres unto the attractor.

The third consideration concerneth medical relations; wherein, whatever effects are delivered, they are either derived from its mineral and ferreous condition, or else magnetical operation. Unto the ferreous and mineral quality pertaineth, what Dioscorides, an ancient writer and soldier under Anthony and Cleopatra, affirmeth, that half a dram of loadstone given with honey and water, proves a purgative medicine and evacuateth gross humours; but this is a quality of great incertainty; for, omitting the vehicle of water and honey, which is of a laxative power itself, the powder of some loadstones in this dose doth rather constipate and bind, than purge and loosen the belly; and if sometimes it cause any laxity, it is probably in the same way with iron and steel unprepared, which will disturb some bodies, and work by purge and vomit. And therefore, whereas it is delivered in a book ascribed unto Galen, that it is a good medicine in dropsies, and evacuates the waters of persons so affected;—it may, I confess, by siccity and astriction, afford a confirmation unto parts relaxed, and such as be hydropically disposed; and by these qualities it may be useful in *hernia*, or ruptures, and for these it is commended by Ætius, Ægineta, and Oribasius, who only affirm that it contains the virtue of *hæmatites*, and being burnt was sometimes vended for it. Wherein notwithstanding there is an higher virtue; and in the same prepared, or in rich veins thereof though crude, we have observed the effects of chalybeate medicines; and the benefits of iron and steel in strong obstructions. And therefore, that was probably a different vein of loadstone, or infected with other mineral mixture, which the ancients commended for a purgative medicine, and ranked the same with the violentest kinds thereof; with *Hippophae*, *Cneoron*, and *Thymelæa*, as we find it in Hippocrates,* and might be somewhat doubtful, whether by the magnesian stone, he understood the loadstone; did not Achilles Statius define the same, the stone that loveth iron.

To this mineral condition belongeth what is delivered by some, that wounds which are made with weapons excited by

* *De morbis internis.*

the loadstone, contract a malignity, and become of more difficult cure; which, nevertheless, is not to be found in the incision of chirurgeons with knives, and lancets touched, which leave no such effect behind them. Hither must we also refer that affirmative, which says, the loadstone is poison; and therefore in the lists of poisons we find it in many authors. But this our experience cannot confirm, and the practice of the king of Zeilan[1] clearly contradicteth, who, as Gartias ab Horto, physician unto the Spanish viceroy, delivereth, hath all his meat served up in dishes of loadstone, and conceives thereby he preserveth the vigour of youth.

But surely from a magnetical activity must be made out what is let fall by Ætius, that a loadstone held in the hand of one that is podagrical, doth either cure or give great ease in the gout; or, what Marcellus Empericus affirmeth, that as an amulet it also cureth the headache: which are but additions unto its proper nature, and hopeful enlargements of its allowed attraction; for perceiving its secret power to draw magnetical bodies, men have invented a new attraction, to draw out the dolour and pain of any part. And from such grounds it surely became a philter, and was conceived a medicine of some venereal attraction; and therefore upon this stone they graved the image of Venus, according unto that of Claudian, *Venerem magnetica gemma figurat.* Hither must we also refer what is delivered concerning its powder, to draw out of the body bullets and heads of arrows, and for the like intention is mixed up in plasters. Which course, although as vain and ineffectual it be rejected by many good authors, yet it is not methinks so readily to be denied, nor the practice of many physicians which have thus compounded plasters thus suddenly to be condemned, as may be observed in the *Emplastrum divinum Nicolai,* the *Emplastrum nigrum* of Augspurg, the *Opodeldoch* and *Attractivum* of Paracelsus, with several more in the dispensatory of Wecker, and practice of Sennertus. The cure also of *Hernia,* or ruptures in Pareus, and the method also of curation lately delivered by Daniel Beckerus,* and approved by the professors of Leyden, that is, of a young man of Spruceland, that casually swallowed a knife

[1] *Zeilan.*] Ceylon. * *De Cultrivoro Prussiaco,* 1636.

about ten inches long, which was cut out of his stomach, and the wound healed up. In which cure, to attract the knife to a convenient situation, there was applied a plaster made up with the powder of loadstone. Now this kind of practice Libavius, Gilbertus, and lately Swickardus,* condemn as vain, and altogether unuseful; because a loadstone in powder hath no attractive power, for in that form it amits its polary respects, and loseth those parts which are the rule of attraction.

Wherein, to speak compendiously, if experiment hath not deceived us, we first affirm that a loadstone in powder amits not all attraction; for if the powder of a rich vein be in a reasonable quantity presented toward the needle freely placed, it will not appear to be void of all activity, but will be able to stir it; nor hath it only a power to move the needle in powder and by itself, but this will it also do if incorporated and mixed with plasters, as we have made trial in the *Emplastrum de Minio*, with half an ounce of the mass mixing a dram of loadstone. For, applying the magdaleon[2] or roll unto the needle, it would both stir and attract it, not equally in all parts, but more vigorously in some, according unto the mine of the stone more plentifully dispersed in the mass. And lastly, in the loadstone powdered, the polary respects are not wholly destroyed; for those diminitive particles are not atomical or merely indivisible, but consist of dimensions sufficient for their operations, though in obscurer effects. Thus, if unto the powder of loadstone or iron we admove the north pole of the loadstone, the powders or small divisions will erect and conform themselves thereto; but if the south pole approach, they will subside, and inverting their bodies, respect the loadstone with the other extreme. And this will happen, not only in a body of powder together, but in any particle of dust divided from it.

Now, though we disavow not these plasters, yet shall we not omit two cautions in their use, that therein the stone be

* In his *Ars Magnetica.*

[2] *magdaleon or roll.*] An ancient word, of Hebrew origin, transmitted, through barbarous Greek, to barbarous Latin usage, denoting any kind of *emplastric* or other *pilulifiable* paste made up into cylindrical pills "or rolls."

not too subtilely powdered, for it will better manifest its attraction in a more sensible dimension. That, where is desired a speedy effect, it may be considered whether it were not better to relinquish the powdered plasters, and to apply an entire loadstone unto the part; and though the other be not wholly ineffectual, whether this way be not more powerful, and so might have been in the cure of the young man delivered by Beckerus.

The last consideration concerneth magical relations; in which account we comprehend effects derived and fathered upon hidden qualities, specifical forms, antipathies and sympathies, whereof, from received grounds of art, no reasons are derived. Herein relations are strange and numerous, men being apt, in all ages, to multiply wonders, and philosophers dealing with admirable bodies, as historians have done with excellent men, upon the strength of their great achievements ascribing acts unto them not only false, but impossible, and exceeding truth as much in their relations, as they have others in their actions. Hereof we shall briefly mention some delivered by authors of good esteem: whereby we may discover the fabulous inventions of some, the credulous supinity of others, and the great disservice unto truth by both; multiplying obscurities in nature, and authorising hidden qualities that are false; whereas wise men are ashamed there are so many true.[3]

And first, Dioscorides puts a shrewd quality upon it, (and such as men are apt enough to experiment), who therewith discovers the incontinency of a wife, by placing the loadstone under her pillow, whereupon she will not be able to remain in bed with her husband. The same he also makes a help unto thievery. For thieves, saith he, having a design upon a house, do make a fire at the four corners thereof, and cast therein the fragments of loadstone, whence ariseth a fume that so disturbeth the inhabitants, that they forsake the house, and leave it to the spoil of the robbers. This relation, how ridiculous soever, hath Albertus taken up above a thousand years after, and Marbodeus, the Frenchman, hath continued the same in latin verse, which, with the notes of Picto-

3 *true.*] Truly so called.—*Wr.*

rius, is current unto our days. As strange must be the lithomancy or divination from this stone, whereby, as Tzetzes delivers, Helenus the prophet foretold the destruction of Troy. And the magic thereof not safely to be believed, which was delivered by Orpheus, that sprinkled with water it will, upon a question, emit a voice not much unlike an infant. But, surely, the loadstone of Laurentius Guascus, the physician, is never to be matched, wherewith, as Cardan delivereth, whatsover needles or bodies were touched, the wounds and punctures, made thereby, were never felt at all. And yet as strange is that which is delivered by some, that a loadstone, preserved in the salt of a *remora*, acquires a power to attract gold out of the deepest wells—certainly a studied absurdity, not casually cast out, but plotted for perpetuity—for the strangeness of the effect ever to be admired, and the difficulty of the trial, never to be convicted.

These conceits are of that monstrosity that they refute themselves in their recitements. There is another of better notice, and whispered through the world with some attention; credulous and vulgar auditors readily believing it, and more judicious and distinctive heads not altogether rejecting it. The conceit is excellent, and, if the effect would follow, somewhat divine, whereby we might communicate like spirits, and confer on earth, with Menippus in the moon. And this is pretended from the sympathy of two needles, touched with the same loadstone, and placed in the centre of two abecedary circles or rings, with letters described round about them, one friend keeping one, and another the other, and agreeing upon an hour wherein they will communicate. For then, saith tradition, at what distance of place soever, when one needle shall be removed unto any letter, the other, by a wonderful sympathy, will move unto the same. But herein I confess my experience can find no truth; for, having expressly framed two circles of wood, and, according to the number of the Latin letters, divided each into twenty-three parts, placing therein two stiles or needles composed of the same steel, touched with the same loadstone, and at the same point; of these two, whensoever I removed the one, although but at the distance of half a span, the other would stand like

Hercules' pillars, and (if the earth stand still,) have surely no motion at all. Now, as it is not possible that any body should have no boundaries, or sphere of its activity, so it is improbable it should effect that at distance, which nearer hand it cannot at all perform.[4]

[4] *Now as it is not possible, &c*] But then itt is most wonderful that some things worke the same effect at distance that they doe conjoynd, as the powder of calcined Roman vitrioll strawd on a rag bloaded from a wounde heals the wounde as well and stanches the blood, as if itt were applyed to the wound. I have seen strange effects by itt.—*Wr.*

Sir Kenelm Digby, in *A late Discourse &c. touching the Cure of Wounds by the Powder of Sympathy*, p. 6, &c. relates the following incident, which happened to himself in France. Mr. James Howell, (author of *Dendrologia* and other works) had received a very severe wound in his hand, in attempting to part two friends who were fighting a duel. Having been requested to endeavor to heal the wound, Sir Kenelm consented, and thus narrates his proceeding:—"I asked him then for any thing that had the blood upon it, so he presently sent for his garter wherewith his hand was first bound, and having called for a bason of water as if I would wash my hands, I took a handful of powder of vitriol, which I had in my study, and presently dissolved it. As soon as the bloody garter was brought me I put it within the bason, observing in the interim what Mr. Howel did, who stood talking with a gentleman in a corner of my chamber, not regarding at all what I was doing; but he started suddenly, as if he had found some strange alteration in himself. I asked him what he ailed? "I know not what ails me, but I find that I feel no more pain; methinks that a pleasing kind of freshness, as it were a wet cold napkin did spread over my hand, which hath taken away the inflammation that tormented me before:" I replied, "since that you feel already so good an effect of my medicament, I advise you to cast away all your plasters, only keep the wound clean, and in a moderate temper twixt heat and cold." This was presently reported to the Duke of Buckingham, and a little after to the King, who were both very curious to know the circumstance of the business, which was, that after dinner I took the garter out of the water, and put it to dry, but Mr. Howel's servant came running, that his master felt as much burning as ever he had done, if not more, for the heat was such as if his hands were twixt coals of fire: I answered, that although that happened at present, yet he should find ease in a short time; for I knew the reason of this new accident, and I would provide accordingly, for his master should be free from that inflammation, it may be, before he could possibly return unto him: but in case he found no ease, I wished him to come presently back again, if not, he might forbear coming. Thereupon he went, and at the instant I did put again the garter into the water, thereupon he found his master without any pain at all. To be brief, there was no sense of pain afterward; but within five or six days the wounds were cicatrized and entirely healed."

Dr. Bostock, in his remarks on the sympathetic powder, seems to have somewhat misstated the *modus operandi* laid down in the aforesaid treatise, which he justly characterises as "exemplifying admirably the mode of philosophising that was fashionable in the earlier part of the seventeenth century." He says, "Every one who is acquainted with the history of surgery is acquainted with the sympathetic powder, which, about the middle of the seventeenth century, engaged the notice and received the sanction of the most learned men of the age. This celebrated remedy derived its virtues not from its composition, but from the mode of its application, for it was not to be applied to the wound, but to the weapon by which the wound was inflicted; the wound was ordered to be merely closed up, and was taken no further care of. Most men of sense, indeed, ridiculed the proposal, but after being fully tried, it was found that the sympathetic mode of treating wounds was more successful than those plans which proceeded upon what were considered scientific principles; and it continued to gain ground in the public estimation, until at length

Again, the conceit is ill contrived, and one effect inferred, whereas the contrary will ensue: for, if the removing of one of the needles from A to B should have any action or influence on the other, it would not entice it from A to B, but repel it from A to Z; for needles excited by the same point of the stone do not attract, but avoid each other, even as these also do, when their invigorated extremes approach unto one other.

Lastly, were this conceit assuredly true, yet were it not a conclusion at every distance to be tried by every head; it being no ordinary or almanack business, but a problem mathematical, to find out the difference of hours in different places; nor do the wisest exactly satisfy themselves in all. For the hours of several places anticipate each other, according unto their longitudes, which are not exactly discovered of every place; and therefore the trial hereof, at a considerable interval, is best performed at the distance of the antœci—that is, such habitations as have the same meridian and equal parallel on different sides of the equator; or, more plainly, the same longitude, and the same latitude unto the south, which we have in the north. For, unto such situations, it is noon and midnight at the very same time.

And therefore, the sympathy of these needles is much of the same mould with that intelligence which is pretended from the flesh of one body transmuted by incision into another. For, if by the art of Taliacotius,* a permutation of flesh, or transmutation be made from one man's body into another, as, if a piece of flesh be exchanged from the bicipital muscle of either party's arm, and about them both an alphabet circumscribed, upon a time appointed, as some conceptions affirm, they may communicate at what distance soever. For, if the one shall prick himself in A, the other at the

* *De Curtorum Chirurgia.*

some innovator ventured to try the experiment of closing up the wound without applying the sympathetic powder to the sword. Wiseman, who wrote about fifty or sixty years after the introduction of this mysterious operation by Sir Kenelm Digby, in describing the importance of keeping the divided parts in union, says, "for here nature will act her part, by the application of blood and nourishment to both sides indifferently, and finish the *coalities* without your further assistance. And this is that which gives such credit to the sympathetic powder."—*Elements of Physiology*, vol. I, p. 448.

same time will have a sense thereof in the same part, and, upon inspection of his arm, perceive what letters the other points out in his. Which is a way of intelligence very strange, and would requite the lost art of Pythagoras, who could read a reverse in the moon.

Now this magnetical conceit, how strange soever, might have some original in reason; for men, observing no solid body whatsoever did interrupt its action, might be induced to believe no distance would terminate the same; and most, conceiving it pointed unto the pole of heaven, might also opinion that nothing between could restrain it. Whosoever was the author, the *Æolus* that blew it about was Famianus Strada, that elegant Jesuit, in his rhetorical prolusions, who chose out this subject to express the stile of Lucretius. But neither Baptista Porta, *De Furtivis Literarum notis*, Trithemius, in his *Steganography*, Selenus, in his *Cryptography*, nor *Nuncius inanimatus*,* make any consideration hereof, although they deliver many ways to communicate thoughts at distance. And this we will not deny may in some manner be affected by the loadstone, that is, from one room into another, by placing a table in the wall common unto both, and writing thereon the same letters one against another; for, upon the approach of a vigorous loadstone unto a letter on this side, the needle will move unto the same on the other. But this is a very different way from ours at present; and hereof there are many ways delivered, and more may be discovered, which contradict not the rule of its operations.

As for *Unguentum Armarium*, called also *Magneticum*, it belongs not to this discourse, it neither having the loadstone for its ingredient, nor any one of its actions; but supposed other principles, as common and universal spirits, which convey the action of the remedy unto the part, and conjoins the virtue of bodies far disjoined. But perhaps the cures it doth are not worth so mighty principles; it commonly healing but simple wounds, and such as, mundified and kept clean, do need no other hand than that of nature, and the balsam of the proper part. Unto which effect, there being fields of medicines, it may be a hazardous curiosity to rely on this;

* By D. Goodwin, Bishop of Hereford.

and, because men say the effect doth generally follow, it might be worth the experiment to try, whether the same will not ensue, upon the same method of cure, by ordinary balsams, or common vulnerary plasters.

Many other magnetisms may be pretended, and the like attractions through all the creatures of nature. Whether the same be verified in the action of the sun upon inferior bodies, whether there be Æolian magnets, whether the flux and reflux of the sea be caused by any magnetism from the moon, whether the like be really made out, or rather metaphorically verified in the sympathies of plants and animals, might afford a large dispute; and Kircherus, in his *Catena Magnetica*, hath excellently discussed the same; which work came late unto our hand, but might have much advantaged this discourse.[5]

Other discourses there might be made of the loadstone, as moral, mystical, theological; and some have handsomely done them, as Ambrose, Austine, Gulielmus Parisiensis, and many more; but these fall under no rule, and are as boundless as men's inventions. And, though honest minds do glorify God hereby, yet do they most powerfully magnify him, and are to be looked on with another eye, who demonstratively set forth its magnalities; who not from postulated or precarious inferences entreat a courteous assent, but from experiments and undeniable effects enforce the wonder of its Maker.

CHAPTER IV.

Of Bodies Electrical.

HAVING thus spoken of the loadstone and bodies magnetical, I shall in the next place, deliver somewhat of electrical, and such as may seem to have attraction like the other. Hereof we shall also deliver what particularly spoken or not generally known is manifestly or probably true, what generally believed is also false or dubious. Now, by electrical bodies I under-

[5] *Many other &c.*] Added in the 2nd edition.

stand, not such as are metallical, mentioned by Pliny and the ancients, for their *electrum* was a mixture made of gold, with the addition of a fifth part of silver—a substance now as unknown as true *aurichalcum*, or Corinthian brass, and set down among things lost by Pancirollus; nor by electric bodies do I conceive such only as take up shavings, straws, and light bodies (in which number the ancients only placed jet and amber;) but such as, conveniently placed unto their objects, attract all bodies palpable whatsoever. I say conveniently placed, that is, in regard of the object, that it be not too ponderous, or any way affixed; in regard of the agent, that it be not foul or sullied, but wiped, rubbed, and excitated; in regard of both, that they be conveniently distant,and no impediment interposed. I say, all bodies palpable, thereby excluding fire, which indeed it will not attract, nor yet draw through it; for fire consumes its effluxions by which it should attract.

Now, although in this rank but two were commonly mentioned by the ancients, Gilbertus discovereth many more; as diamonds, sapphires, carbuncles, iris, opals, amethysts, beryl, crystal, Bristol stones, sulphur, mastic, hard wax, hard resin, arsenic, *sal-gemma*, roche alum, common glass, *stibium*, or glass of antimony. Unto these, Cabeus addeth white wax, *gum elemi*, *gum guaiaci*, *pix hispanica*, and *gypsum*. And unto these we add *gum animi*, *benjamin*, *talcum*, china-dishes, *sandaraca*, turpentine, *styrax liquida*, and *caranna* dried into a hard consistence.[6] And the same attraction we find not only in simple bodies, but such as are much compounded; as in the *oxycroceum* plaster, and obscurely that *ad herniam*, and *gratia Dei;* all which, smooth and rightly prepared, will discover a sufficient power to stir the needle, settled freely upon a well pointed pin; and so as the electric may be applied unto it without all disadvantage.

But the attraction of these electrics we observe to be very different. Resinous or unctuous bodies, and such as will

[6] *And unto these we add gum animi, &c.*] The author is perfectly correct in adding (evidently from his own experiments) these substances to the list of electrics. The "compounded bodies," which he next mentions, derive their electrical properties chiefly from the resin or wax which they contain.—*Br.*

flame, attract most vigorously, and most thereof without frication; as *animi, benjamin,* and most powerfully good hard wax, which will convert the needle almost as actively as the loadstone. And we believe that all, or most of this substance, if reduced to hardness, tralucency, or clearness, would have some attractive quality. But juices concrete, or gums easily dissolving in water, draw not at all; as *aloe, opium, sanguis draconis, lacca, galbanum, sagapenum.* Many stones also, both precious and vulgar, although terse and smooth, have not this power attractive: as emeralds, pearl, jaspis, cornelians, agate, heliotropes, marble, alabaster, touchstone, flint, and bezoar. Glass attracts but weakly, though clear; some slick[7] stones, and thick glasses indifferently; arsenic but weakly; so likewise glass of antimony; but *crocus metallorum*[8] not at all. Salts generally, but weakly; as *sal gemma,* alum, and also talc; not very discoverably by any frication; but, if gently warmed at the fire, and wiped with a dry cloth, they will better discover their electricities.

No metal attracts, nor animal concretion we know,[9] although polite and smooth; as we have made trial in elks' hoofs, hawks' talons, the sword of a sword-fish, tortoise-shells, sea-horse, and elephants' teeth, in bones, in hart's horn, and what is usually conceived unicorn's horn. No wood, though never so hard and polished, although out of some thereof electric bodies proceed; as ebony, box, *lignum vitæ,* cedar, &c. And, although jet and amber be reckoned among bitumens, yet neither do we find *asphaltum,* that is bitumen of Judea, nor sea-coal, nor camphor, nor *mummia,* to attract, although we have tried in large and polished pieces. Now this attraction have we tried in straws and paleous bodies,

[7] *slick.*] Smooth.

[8] *crocus metallorum.*] And yet (which is the more to be enquired) *crocus martis,* which hath much affinitye to, and his first original from iron, should in common reason attract more than any of the other.—*Wr.*

[9] *No metal attracts, nor animal concretion we know.*] Browne is in error respecting all the substances which he mentions in this paragraph, as well as in preceding and following ones, as not susceptible of electrical excitation; for all of them are in fact electrics. But as many among the number, especially the metals, require very perfect insulation, before they can be made to manifest electricity by friction, as many others, especially the true gums, the animal concretions, and the woods, require also to be made very dry; and as some further precautions are necessary in certain cases, in order to insure the success of the experiment, our author's failure, and consequent errors on this subject, are readily explained.—*Br.*

in needles of iron equilibrated, powders of wood and iron, in gold and silver foliate; and not only in solid, but fluent and liquid bodies, as oils made both by expression and distillation, in water, in spirits of wine, vitriol, and *aqua fortis*.

But how this attraction is made, is not so easily determined: that it is performed by effluviums is plain, and granted by most; for electrics will not commonly attract, except they grow hot or become perspirable. For if they be foul and obnubilated, it hinders their effluxion; nor if they be covered, though but with linen or sarsenet, or if a body be interposed, for that intercepts the effluvium. If also a powerful and broad electric of wax or *animi* be held over fine powder, the atoms or small particles will ascend most numerously unto it; and if the electric be held unto the light, it may be observed that many thereof will fly, and be as it were discharged from the electric,[1] to the distance sometimes of two or three inches. Which motion is performed by the breath of the effluvium issuing with agility; for as the electric cooleth, the projection of the atoms ceaseth.

The manner hereof Cabeus wittily attempteth, affirming that this effluvium attenuateth and impelleth the neighbour air, which returning home in a gyration, carrieth with it the obvious bodies unto the electric. And this he labours to confirm by experiments; for if the straws be raised by a vigorous electric, they do appear to wave and turn in their ascents. If, likewise, the electric be broad, and the straws light and chaffy, and held at a reasonable distance, they will not arise unto the middle, but rather adhere toward the verge or borders thereof. And, lastly, if many straws be laid together, and a nimble electric approach, they will not all arise unto it, but some will commonly start aside, and be whirled a reasonable distance from it. Now, that the air impelled returns unto its place in a gyration or whirling, is evident from the atoms or moats in the sun. For when the sun

[1] *be as it were discharged from the electric.*] The true cause of this "projection of the atoms," is to be found in the law of electrical attraction and repulsion:—*bodies similarly electrified, repel, and dissimilarly electrified, attract, each other.* The particles are first attracted by the excited electric, because they are in a dissimilar state of electricity to it; by contact with it, however, they acquire a similar state of electricity, and are, in consequence repelled from it.—*Br.*

so enters a hole or window, that by its illumination the atoms or motes become perceptible, if then by our breath the air be gently impelled, it may be perceived that they will circularly return, and in a gyration,[2] unto their places again.

Another way of their attraction is also delivered; that is, by a tenuious emanation or continued effluvium, which after some distance retracteth into itself; as is observable in drops of syrups, oil, and seminal viscosities, which spun at length, retire into their former dimensions. Now these effluviums advancing from the body of the electric, in their return do carry back the bodies, whereon they have laid hold, within the sphere or circle of their continuities; and these they do not only attract, but with their viscous arms hold fast a good while after. And if any shall wonder why these effluviums issuing forth impel and protrude not the straw before they can bring it back; it is because the effluvium, passing out in a smaller thread and more enlengthened filament, stirreth not the bodies interposed, but, returning unto its original, falls into a closer substance and carrieth them back unto itself. And this way of attraction is best received, embraced by Sir Kenelm Digby in his excellent treatise of bodies, allowed by Des Cartes in his Principles of Philosophy, as far as concerneth fat and resinous bodies, and with the exception of glass, whose attraction he also deriveth from the recess of its efflux-ion. And this in some manner the words of Gilbertus will bear. *Effluvia illa tenuiora concipiunt et amplectuntur corpora, quibus uniuntur, et electris tanquam extensis brachiis, et ad fontem propinquitate invalescentibus effluviis, deducuntur.* And if the ground were true, that the earth were an electric body, and the air but the effluvium thereof, we might have more reason to believe that from this attraction, and by this effluxion, bodies tended to the earth, and could not remain above it.[3]

[2] *gyration*] The same gyration appeares in thistledowne, and small feathers, and the smoke of a snuff, &c.—*Wr.*

[3] *And if the ground, &c.*] That there is a constant breathing of the earth every twelve houres, where itt may easily break forthe, as in the botome of the ocean, is more than probable by the rising of the seas every twelve houres, which wee call the flow, which when it is lifted up by the volubility of its nature, is apt to follow the leading of the moone, but is not raised by itt, because itt keeps a constant course, if there be no strong impediment, as well when she is under, as when above the earthe.—*Wr.*

Our other discourse of electricks concerneth a general opinion touching jet and amber, that they attract all light bodies, except *ocymum* or basil, and such as be dipped in oil or oiled; and this is urged as high as Theophrastus. But Scaliger acquitteth him; and had this been his assertion, Pliny would probably have taken it up, who herein stands out, and delivereth no more but what is vulgarly known. But Plutarch speaks positively in his *Symposiacks*, that amber attracteth all bodies, excepting basil and oiled substances. With Plutarch consent many authors, both ancient and modern; but the most inexcusable are Lemnius and Rueus: whereof the one, delivering the nature of minerals mentioned in Scripture, the infallible fountain of truth, confirmeth their virtues with erroneous traditions; the other, undertaking the occult and hidden miracles of nature, accepteth this for one, and endeavoureth to allege a reason of that which is more than occult, that is, not existent.

Now herein, omitting the authority of others, as the doctrine of experiment hath informed us, we first affirm, that amber attracts not basil is wholly repugnant unto truth. For if the leaves thereof or dried stalks be stripped into small straws, they arise unto amber, wax, and other electricks, no otherwise than those of wheat and rye; nor is there any peculiar fatness or singular viscosity in that plant that might cause adhesion, and so prevent its ascension. But that jet and amber attract not straws oiled, is in part true and false; for, if the straws be much wet or drenched in oil, true it is that amber draweth them not, for then the oil makes the straw to adhere unto the part whereon they are placed, so that they cannot rise unto the attractor; and this is true, not only if they be soaked in oil, but spirits of wine or water. But if we speak of straws or festucous divisions lightly drawn over with oil, and so that it causeth no adhesion, or if we conceive an antipathy between oil and amber, the doctrine is not true; for amber will attract straws thus oiled, it will convert the needles of dials made either of brass or iron, although they be much oiled; for in these needles consisting free upon their centre, there can be no adhesion. It will likewise attract oil itself, and if it approacheth unto a drop thereof, it becom-

eth[4] conical, and ariseth up unto it, for oil taketh not away his attraction, although it be rubbed over it. For if you touch a piece of wax, already excitated, with common oil, it will, notwithstanding, attract, though not so vigorously as before; but if you moisten the same with any chymical oil, water, or spirits of wine, or only breathe upon it, it quite amits its attraction, for either its effluences cannot get through, or will not mingle with those substances.

It is likewise probable the ancients were mistaken concerning its substance and generation; they conceiving it a vegetable concretion made of the gums of trees, especially pine and poplar, falling into the water, and, after, indurated or hardened, whereunto accordeth the fablo of Phaeton's sisters. But surely the concretion is mineral, according as is delivered by Boëtius. For either it is found in mountains and mediterraneous parts, and so it is a fat and unctuous sublimation in the earth, concreted and fixed by salt and nitrous spirits wherewith it meeteth. Or else, which is most usual, it is collected upon the sea shore, and so it is a fat and bituminous juice coagulated by the saltness of the sea.[5] Now, that salt

[4] *it becometh.*] i. e. the oyle becometh.—*Wr.*

[5] *It is likewise probable, &c.*] The whole progress of subsequent, and especially of recent observations and experiments on amber, has tended to shew that the older was the more correct opinion; and that Sir Thomas concluded too hastily from its being found on the sea-shore, and even in deep mines, that its origin could not be vegetable. Brongniart and Leman, (distinguished French mineralogists,) both consider it a vegetable juice concreted—partly by the lapse of time—and modified by its subterraneous locality. It is found in the greatest abundance in beds of fossilized timber, at considerable depth, and beneath several other strata, near the coast of Prussia: it occurs there in the very midst of the timber—which appears to have produced it. Leman remarks, that a crust of dirt and other foreign substances, is often found on the surface of amber, like that which is contracted by vegetable gum in flowing over the bark of the tree, or falling on the ground. Specimens found on the sea-shore, or (occasionally) in alluvial deposits, are usually free from the crust. It is to be supposed that amber may have been the gum of a now extinct tree. This implied antiquity has been argued from the class of formations in which it is most copiously met with, and from the fact that the insects, &c. inclosed in it, are not the recent species, nor even analogous to those now existing in the same spot, tropical genera being found in the amber of northern latitudes. It may be admitted as probable, that we possess the ambers of several different trees: for very distinct varieties of it are known; one of which is noticed by Brongniart as destitute of the *succinic acid*, which he considers the chief criterion by which amber is distinguishable from *mellite*, and the fossilized resins, and from gum copal. Its original fluidity is unquestionable, from the delicacy of many species found in it.

The author of the article, AMBER, in the *Encyc. Brit.* considers it rather likely to have been softened by the action of the sun than to have been ever liquid. One of the reasons adduced, seems to oppose rather than to support this opinion. "Drops of clear water are sometimes preserved in amber. These have doubt-

spirits have a power to congeal and coagulate unctuous bodies, is evident in chymical operations; in the distillations of arsenick, sublimate, and antimony; in the mixture of oil of juniper with the salt and acid spirit of sulphur; for thereupon ensueth a concretion unto the consistence of birdlime; as also in spirits of salt, or *aqua fortis* poured upon oil of olive, or more plainly in the manufacture of soap. And many bodies will coagulate upon commixture, whose separated natures promise no concretion. Thus, upon a solution of tin by *aqua fortis*, there will ensue a coagulation, like that of whites of eggs. Thus, the volatile salt of urine will coagulate *aqua vitæ*,[6] or spirits of wine; and thus, perhaps, as Helmont excellently declareth, the stones or calculous concretions in kidney or bladder may be produced, the spirits or volatile salt of urine conjoining with the *aqua vitæ* potentially lying

less been received into it while *soft*, &c." More probably when *fluid*. The same writer mentions an assertion of Girtanner, that amber is an "*animal* product—a sort of honey or wax formed by the red ant, *formica rufa*." But after detailing some of Girtanner's observations, he represents his opinion as being that "amber is nothing but a *vegetable* oil, rendered concrete by the acid of ants." The article contains other incorrect statements;—that amber is the basis of *all* varnishes; and that "it seems generally agreed upon, that amber is a true bitumen of a fossil origin." This might be more generally the opinion when the article was first written—but is not so now; and therefore it ought not to have remained unaltered in the edition now publishing of the *Enc. Brit.* in which the article appears nearly in its former state;—some paragraphs omitted, but no addition—no correction—no remodelling.

Patrin supposes it to be honey, gradually bitumenized by the action of certain *mineral* acids.

One of the most celebrated modern experimental philosophers, Sir David Brewster, from a series of experiments on the optical properties of amber, has arrived at a conclusion precisely in accordance with the opinion of the ancients, viz. that it is "beyond a doubt an *indurated vegetable juice*;" and he observes, "that the traces of a regular structure, indicated by its action upon polarised light, are not the effect of the ordinary laws of crystallisation by which *mellite* has been formed, but are produced by the same causes which influence the mechanical condition of gum arabic, and other gums which are known to be formed by the successive deposition and induration of vegetable fluids."

An interesting addition to the above authorities, in support of the vegetable origin of amber, occurs in a paper of Dr. Mac Culloch's, in the *Quarterly Journal of Science*, &c. vol. xvi, p. 41. His leading object is to point out the readiest mode of distinguishing those specimens of gum copal, animi, and perhaps other resins enclosing insects, which are sometimes offered for sale as amber. On the fact of insects being often found in amber, Dr. M. mainly insists, as the proof of its vegetable origin, especially when viewed in connexion with similar enclosures in unfossilized resins. He proceeds to a chemical examination and comparison of amber with similar bodies, and ends by saying, "from these analogies we may, perhaps, safely conclude, that amber has been a vegetable resin converted to its present state during the same time and by the same causes which have converted common vegetable matter into jet, and, perhaps, ultimately into coal."

6 *Aqua vitæ.*] Some March beere or very stale wil turne *aqua vitæ* into the shape of whey.—*Wr.*

therein; as he illustrateth from the distillation of fermented urine; from whence ariseth an *aqua vitæ* or spirit, which the volatile salt of the same urine will congeal, and, finding an earthy concurrence, strike into a lapideous substance.

Lastly, we will not omit what Bellabonus, upon his own experiment, writ from Dantzick, unto Mellichius, as he hath left recorded in his chapter *De Succino*, that the bodies of flies, pismires, and the like, which are said ofttimes to be included in amber, are not real, but representative, as he discovered in several pieces broke for that purpose. If so, the two famous epigrams hereof in *Martial* are but poetical, the pismire of Brassavolus, imaginary, and Cardan's mausoleum for a fly, a mere fancy. But hereunto we know not how to assent, as having met with some whose reals make good their representments.[7]

[7] *representments.*] Avicen affirms that ambar appeares plentifully in hot countries, (as the south parts of Arabia Felix, neare the sea) especially after great earthquakes, which makes good the assertion [that itt is most usually collected on the sea shore.] Whence itt is most probable that at the eruption thereof, itt might involve and consequently intumulate Martial's viper and Cardan's flye.—*Wr.*

The dean's fancy seems to have been running upon a mineral *rendered fluid by heat;* it might have occurred to him, that "Messrs. the viper and flye," would, in such a bath, have been more than *intumulated;*—they would have suffered *incineration!* There is, however, no accounting for the fables of antiquity, or the fancy of poets. The fabulous origin of amber, from the tears of the sisters of Phaeton, lamenting his fate on the banks of Eridanus, is celebrated in Martial's Epigram on the bee in amber. But unfortunately for the poet, no authentic instance is said to have occurred of that insect having been found in amber. Sir Thomas, however, is quite correct in asserting the reality of many specimens of insects, &c. which have been found in it.

CHAPTER V.

Compendiously of sundry other common tenets concerning minerals and terreous bodies, which, examined, prove either false or dubious.—That a diamond is softened or broken by the blood of a goat; that glass is poison, and that it is malleable: of the cordial quality of gold; that a pot full of ashes will contain as much water as it would without them; of white powder that kills without report; that coral is soft under water, but hardeneth in the air; that porcelain lies under the earth an hundred years in preparation; that a carbuncle gives a light in the dark; of the eagle stone; of fairy stones; with some others.

1. And, first, we hear it in every mouth, and in many good authors read it, that a diamond, which is the hardest of stones, not yielding unto steel, emery, or any thing but its own powder, is yet made soft, or broke by the blood of a goat. Thus much is affirmed by Pliny, Solinus, Albertus, Cyprian, Austin, Isidore, and many christian writers: alluding herein unto the heart of man, and the precious blood of our Saviour, who was typified by the goat that was slain, and the scapegoat in the wilderness; and at the effusion of whose blood, not only the hard hearts of his enemies relented, but the stony rocks and vail of the temple were shattered. But this, I perceive, is easier affirmed than proved. For lapidaries, and such as profess the art of cutting this stone, do generally deny it; and they that seem to countenance it have in their deliveries so qualified it, that little from thence of moment can be inferred for it. For first, the holy fathers, without a further enquiry, did take it for granted, and rested upon the authority of the first deliverers. As for Albertus, he promiseth this effect, but conditionally, not except the goat drink wine, and be fed with *siler montanum*, *petroselinum*, and such herbs as are conceived of power to break the stone in the bladder. But the words of Pliny, from whom most likely the rest at first derived it, if strictly considered, do rather

overthrow, than any way advantage this effect. His words are these: *Hircino rumpitur sanguine, nec aliter quàm recenti, calidoque macerata, et sic quoque multis ictibus, tunc etiam præterquam eximias incudes malleosque ferreos frangens.* That is, it is broken with goat's blood, but not except it be fresh and warm, and that not without many blows, and then also it will break the best anvils and hammers of iron. And answerable hereto is the assertion of Isidore and Solinus. By which account, a diamond steeped in goat's blood rather increaseth in hardness, than acquireth any softness by the infusion, for the best we have are comminuible without it, and are so far from breaking hammers, that they submit unto pistillation, and resist not an ordinary pestle.[8]

Upon this conceit arose, perhaps, the discovery of another —that the blood of a goat was sovereign for the stone; as it stands commended by many good writers, and brings up the composition in the powder of Nicolaus,* and the electuary of the queen of Colein. Or rather, because it was found an excellent medicine for the stone, and its ability commended by some to dissolve the hardest thereof, it might be conceived by amplifying apprehensions to be able to break a diamond; and so it came to be ordered that the goat should be fed with saxifragous herbs, and such as are conceived of power to break the stone. However it were, as the effect is false in the one, so is it, surely, very doubtful in the other. For, although inwardly received, it may be very diuretic, and expulse the stone in the kidneys, yet how it should dissolve or break that in the bladder, will require a further dispute; and, perhaps, would be more reasonably tried by a warm injection thereof, than as it is commonly used. Wherein, notwithstanding, we should rather rely upon the urine in a castling's bladder, a resolution of crabs' eyes, or the second distillation of urine, as Helmont hath commended; or rather (if any such might be found) a chylifactory menstruum or di-

* *Pulvis Lithontripticus.*

8]. *And first, &c.*] Nothing can put Ross out of conceit with "the ancients." Though he admits the fact that diamonds are mastered by hammers, and not, as asserted by the ancients, softened by goat's blood; yet doth he not a whit the less believe this assertion as applied to *adamant*, of which, he says there were divers kinds.—*Arcana*, p. 196.

gestive preparation, drawn from species or individuals whose stomachs peculiarly dissolve lapideous bodies.

2. That glass is poison, according unto common conceit, I know not how to grant. Not only from the innocency of its ingredients, that is, fine sand, and the ashes of glass-wort or fern, which in themselves are harmless and useful, or because I find it by many commended for the stone, but also from experience, as having given unto dogs above a dram thereof, subtilely powdered in butter and paste, without any visible disturbance.[9]

The conceit is surely grounded upon the visible mischief of glass grossly or coarsely powdered, for that indeed is mortally noxious, and effectually used by some to destroy mice and rats; for, by reason of its acuteness and angularity, it commonly excoriates the parts through which it passeth, and solicits them unto a continual expulsion. Whereupon there ensue fearful symptoms, not much unlike those which attend the action of poison. From whence, notwithstanding, we cannot with propriety impose upon it that name, either by occult or elementary quality, which he that concedeth will much enlarge the catalogues or lists of poisons. For many things, neither deleterious by substance or quality, are yet destructive by figure, or some occasional activity. So are leeches destructive, and by some accounted poison; not properly, that is, by temperamental contrariety, occult form, or so much as elemental repugnancy; but because, being inwardly taken, they fasten upon the veins and occasion an effusion of blood, which cannot be easily staunched. So a sponge is mischievous, not in itself, for in its powder it is harmless; but because, being received into the stomach it swelleth, and occasioning a continual distention, induceth a strangulation.[1] So pins, needles, ears of rye or barley may be poison.[2] So Daniel de-

9 *without any visible disturbance.*] Edit. 1646 adds, "And the trial thereof we the rather did make in that animal, because Grevinus, in his *Treatise of Poisons*, affirmeth that dogs are inevitably destroyed thereby."—p. 84.

1 *So a sponge is mischievous, &c.*] As to a dog, soakt in butter or grease.—*Wr.*

2 *ears of rye or barley, &c.*] A very remarkable and affecting proof of the truth of this observation occurred a few years ago in the family of the present Earl of Morley. His lordship's eldest son, Lord Boringdon, then in the twelfth year of his age, in the course of an evening walk with his father and brother, on the 17th of July, 1817, put an ear of rye into his mouth; and it appears that within a few seconds afterwards, it had become out of the power of man to save his

stroyed the dragon by a composition of three things, whereof none was poison alone, nor properly altogether; that is, pitch, fat, and hair, according as is expressed in the history. "Then Daniel took pitch, and fat, and hair, and did seethe them together, and made lumps thereof; these he put in the dragon's mouth, and so he burst asunder."[2] That is, the fat and pitch being cleaving bodies, and the hair continually extimulating the parts, by the action of the one nature was provoked to expel, but by the tenacity of the other forced to retain; so that, there being left no passage in or out, the dragon brake in pieces. It must, therefore, be taken of grossly-powdered glass, what is delivered by Grevinus: and from the same must that mortal dysentery proceed which is related by Sanctorius. And in the same sense only shall we allow a diamond to be poison; and whereby, as some relate, Paracelsus himself was

life. The lower part of the ear first entered the windpipe, and after the first fit of coughing, which lasted about five or six minutes, no more inconvenience was felt. He was about half a mile from home when the accident happened;—he walked gently home. Dr. Heath, who immediately saw him, gave him some bread, which he swallowed without difficulty. It was hoped that he had, in the field, unknowingly coughed up the corn, or that it had passed into the stomach. It appears that the ear of rye passed gently through the whole of the lungs without producing any great effect. It was at the very bottom of the lungs, where it ultimately lodged, that on the fourth day from the accident, it injured a vessel, and occasioned a hæmorrhage. In this situation it caused an abscess in the lower part of the lungs and liver, which terminated fatally on the 1st of November.

It will readily be supposed that nothing which medical skill could devise was omitted. Dr. Spurzheim and Dr. Roberton of Paris, Dr. Young and other distinguished medical men, assisted Dr. Heath. Not only the extreme rarity of the case, but the amiable character and high rank of the patient secured to him all that human ingenuity could effect. And it was a consolation to the family to ascertain, by subsequent investigation, that had the exact nature of the injury been known at the very first, no materially different treatment could have been adopted.

This account has been sketched from a highly interesting and very detailed narrative in MS. in the possession of the family, with which I have been favoured, through the kind intervention of a friend.

[2] *Then Daniel took, &c.*] Ctesias makes mention of a horse-pismire (i.e. the bigger kind of them in hollow trees) which was fed by the magi, till hee grew to such a vast bulke as to devour two pound of flesh a daye. This story might possibly relate to Daniel's dragon, which was before his time at least one hundred and ninety years. For hee wrote in the the 94th Olympiade, whereas the captivitye was in the 43rd.—*Wr.*

The gravity of Sir Thomas's burlesque explanation of this apocryphal story (for he cannot for a moment be considered as speaking seriously) is happily imitated in the preceding note by the dean, whose delectable quotation from Ctesias (supported by a grave chronological computation) supplies the only point omitted by our author; viz., a conjecture as to the *species* of the creature who is said to have received, with so good a grace, the boluses of the prophet. Who will hesitate to admit the probability of the dean's suggestion, that the dragon of Daniel was no other than the horse-pismire of Ctesias?

poisoned. So, even the precious fragments and cordial gems, which are of frequent use in physic, and in themselves confessed of useful faculties, received in gross and angular powders, may so offend the bowels, as to procure desperate languors, or cause most dangerous fluxes.

That glass may be rendered malleable and pliable unto the hammer many conceive, and some make little doubt, when they read in Dio, Pliny, and Petronius, that one unhappily effected it for Tiberius;[3] which, notwithstanding, must needs seem strange unto such as consider that bodies are ductile from a tenacious humidity, which so holdeth the parts together, that, though they dilate or extend, they part not from each other;—that bodies run into glass when the volatile parts are exhaled, and the continuating humour separated, the salt and earth (that is, the fixed parts) remaining;—and therefore vitrification maketh bodies brittle, as destroying the viscous humours which hinder the disruption of parts. Which may be verified even in the bodies of metals; for glass of lead or tin is fragile, when that glutinous sulphur hath been fired out which made their bodies ductile.

He that would most probably attempt it, must experiment upon gold, whose fixed and flying parts are so conjoined, whose sulphur and continuating principle is so united unto the salt, that some may be hoped to remain to hinder fragility after vitrification. But how to proceed, though after frequent corrosion, as that upon the agency of fire it should not revive into its proper body before it comes to vitrify, will prove no easy discovery.[4]

3. That gold inwardly taken, either in substance, infusion, decoction, or extinction,[5] is a cordial of great efficacy, in sundry medical uses, although a practice much used, is also much questioned, and by no man determined beyond dispute.[6]

[3] *One unhappily effected it, &c.*] *Unhappily*, because Tiberius put the artist to death for his performance. No explanation, however, is given by Dion Cassius of the mode in which he was said to have rendered whole a glass which he had broken.

[4] *no easy discovery.*] The two preceding paragraphs were added in the 2nd edition.

[5] *extinction.*] He refers probably to taking a liquid in which gold heated red hot has been extinguished.

[6] *That gold, &c.*] The whole of this examination of the question, how far gold is available as a medicine, is conducted with our author's usual acuteness and caution; and is remarkable as much for the candor with which he confesses his want of data whereby to determine

There are, hereof, I perceive, two extreme opinions; some excessively magnifying it, and probably beyond its deserts; others extremely vilifying it, and perhaps below its demerits. Some affirming it a powerful medicine in many diseases; others averring that so used, it is effectual in none: and in this number are very eminent physicians, Erastus, Duretus, Rondeletius, Brassavolus, and many other; who, beside the strigments[7] and sudorous adhesions from men's hands, acknowledge that nothing proceedeth from gold in the usual decoction thereof. Now the capital reason that led men unto this opinion, was their observation of the inseparable nature of gold, it being excluded in the same quantity as it was received, without alteration of parts, or diminution of its gravity.

Now, herein to deliver somewhat, which in a middle way may be entertained: we first affirm, that the substance of gold is invincible by the powerfullest action of natural heat; and that not only alimentally in a substantial mutation, but also medicamentally in any corporeal conversion; as is very evident, not only in the swallowing of golden bullets, but in the lesser and foliate divisions thereof; passing the stomach and guts even as it doth the throat, that is, without abatement of weight or consistence; so that it entereth not the veins with those electuaries wherein it is mixed; but taketh leave of the permeant parts, at the mouths of the mesaraicks, or lacteal vessels, and accompanieth the inconvertible portion unto the siege. Nor is its substantial conversion expectable

the question, as for the extensive acquaintance he displays with what had been said by others. With all the advantages of subsequent experiment during nearly two centuries, it does not appear that this most precious metal has taken a prominent place among the medicines of the present day. Dr. Block of Berlin, informs us, in his *Medicinische Bemerkungen*, that he has given, in obstinate constipations of the bowels, when unattended with pains or inflammation, not only pills of lead, but also of gold, with the best success, after every usual method has been resorted to in vain; whence it appeared to him that such remedies acted merely by their specific gravity. An eminent medical friend, of whom I have recently enquired, whether the chloride of gold is used in France, has favoured me with the following reply: —"The chloride of gold has for several years past been used as a medicine in Paris, and its virtues much vaunted of by individuals for the cure of venereal and many other diseases; but it has not received corresponding support from French practitioners generally, and in this country I do not remember that it has been extensively tried in practice." The chloride of gold is the *red tincture of gold*, which was originally prepared by Glauber.

7 *strigments.*] Scrapings. Here again is a coinage of the author's, for which he is his own sole authority.

in any composition or aliment wherein it is taken. And therefore that was truly a starving absurdity which befel the wishes of Midas. And little credit there is to be given to the golden hen, related by Wendlerus. And so in the extinction of gold, we must not conceive it parteth with any of its salt or dissoluble principle thereby, as we may affirm of iron; for the parts thereof are fixed beyond division; nor will they separate upon the strongest test of fire. This we affirm of pure gold; for that which is current and passeth in stamp amongst us, by reason of its alloy, which is a proportion of silver or copper mixed therewith, is actually dequantitated by fire, and possibly by frequent extinction.

Secondly, although the substance of gold be not immuted, or its gravity sensibly decreased, yet that from thence some virtue may proceed either in substantial reception or infusion, we cannot safely deny. For possible it is that bodies may emit virtue and operation without abatement of weight; as is most evident in the loadstone, whose effluencies are continual and communicable without a minoration of gravity; and the like is observable in bodies electrical, whose emissions are less subtile. So will a diamond or sapphire emit an effluvium sufficient to move the needle or a straw, without diminution of weight. Nor will polished amber, although it send forth a gross and corporeal exhalement, be found a long time defective upon the exactest scales; which is more easily conceivable in a continued and tenacious effluvium, whereof a great part retreats into its body.

Thirdly, if amulets do work by emanations from their bodies, upon those parts whereunto they are appended, and are not yet observed to abate their weight; if they produce visible and real effects by imponderous and invisible emissions, it may be unjust to deny the possible efficacy of gold, in the non-omission of weight, or deperdition of any ponderous particles.[8]

[8] *Thirdly, if amulets, &c.*] This paragraph is so cautiously worded, by virtue of the little *if*, as to convey a proposition at once safe and undeniable. But, like many other cautious propositions it says nothing. The questions remain, what amulets do "produce visible and real effects?"—whether these "work by emanations?"—and whether they do so without "abating their weight?" Though the Hon. Robt. Boyle was pleased to attribute the cure of an hæmorrhage to wearing "some moss from a dead man's skull," our readers will probably be in-

Lastly, since *stibium* or glass of antimony, since also its *regulus* will manifestly communicate unto water or wine a purging and vomitory operation, and yet the body itself, though after iterated infusions, cannot be found to abate either virtue or weight: we shall not deny but gold may do the like, that is, impart some effluences unto the infusion, which carry with them the separable subtilties thereof.[9]

That therefore this metal thus received hath any undeniable effect, we shall not imperiously determine, although, beside the former experiments, many more may induce us to believe it. But, since the point is dubious and not yet authentically decided, it will be no discretion to depend on disputable remedies; but rather, in cases of known danger, to have recourse unto medicines of known and approved activity. For, beside the benefit accruing unto the sick, hereby may be avoided a gross and frequent error, commonly committed in the use of doubtful remedies conjointly with those which are of approved virtues, that is, to impute the cure unto the conceited remedy, or place it on that whereon they place their opinion; whose operation, although it be nothing, or its concurrence not considerable, yet doth it obtain the name of the whole cure, and carrieth often the honour of the capital energy, which had no finger in it.

clined to indulge a good deal of scepticism as to the efficacy of such charms. Camphor, volatile alkali, pungent acids, &c. which are often used, and perhaps efficaciously, as repellents of contagion, can scarcely be termed *amulets*; and if they are so, they most certainly do not come within Sir Thomas's definition, as "not abating their weight by emanations." The Abbé Pluche speaks of the origin of amulets, properly so called, in his *Histoire du Ciel*, 12mo. tom. I, p. 360. See also a very curious little work on amulets, by Petr. Frid. Arpe, entitled *De prodigiosis Naturæ et Artis Operibus Talismanes et Amuleta dictis*, 12mo. *Hamburgi*, 1717.

[9] *Lastly, since* stibium, *&c.*] The *antimoniall cupp* was anciently employed in domestic medicine, on the double principle here stated, by which the metal, without losing its bulk, imparted to the wine poured into it the desired property. There occurs in the *Gentleman's Magazine* (vol. CII, pt. i, p. 581,) a curious account of one of these "cupps." It is made of the *regulus of antimony*, cast in a mould; is about two inches high by about as many in diameter, and holds about four ounces; is contained in a leathern box; within are *written directions* for its use, prefaced by a full announcement of the "vertues of the cupp," together with some Latin and English verses. The process of preparing the cup for use was either by letting wine stand for a certain time in it, or (if it was required to *antimonize* more wine than the cup would contain), by plunging the cup into the requisite quantity of wine. Regulus of antimony was also anciently used in the form of pills, which, it is asserted, were, by some frugal persons, *re-employed* as often as they could be recovered!

Herein exact and critical trial should be made by public enjoinment, whereby determination might be settled beyond debate; for, since thereby not only the bodies of men, but great treasures might be preserved, it is not only an error of physics, but folly of state, to doubt thereof any longer.[1]

4. That a pot full of ashes will still contain as much water as it would without them, although by Aristotle in his problems taken for granted, and so received by most, is not effectible upon the strictest experiment I could ever make. For when the airy interstices are filled, and as much of the salt of the ashes as the water will imbibe is dissolved, there remains a gross and terreous portion at the bottom, which will possess a space by itself, according whereto, there will remain a quantity of water not receivable: so will it come to pass in a pot of salt, although decrepitated:[2] and so also in a pot of snow; for so much it will want in reception, as its solution taketh up, according unto the bulk whereof, there will remain a portion of water not to be admitted: so a glass stuffed with pieces of sponge will want about a sixth part of what it would receive without it: so sugar will not dissolve beyond the capacity of the water, nor a metal in *aqua fortis* be corroded beyond its reception; and so a pint of salt of tartar, exposed unto a moist air until it dissolve, will make far more liquor, or, as some term it, oil, than the former measure will contain.

Nor is it only the exclusion of air by water, or repletion of cavities possessed thereby, which causeth a pot of ashes to admit so great a quantity of water, but also the solution of the salt of the ashes into the body of the dissolvent: so a pot of ashes will receive somewhat more of hot water than of cold, for the warm water imbibeth more of the salt; and a vessel of ashes more than one of pin-dust or filings of iron; and a glass full of water will yet drink in a proportion of salt or sugar without overflowing.

Nevertheless, to make the experiment with most advantage, and in which sense it approacheth nearest the truth, it must be made in ashes thoroughly burnt and well reverberated by

1 *Herein, &c.*] Added in the 2nd edition.

2 *decrepitated.*] Calcined till it has ceased to crackle.

fire, after the salt thereof hath been drawn out by iterated decoctions. For then the body, being reduced nearer unto earth, and emptied of all other principles, which had former ingression unto it, becometh more porous, and greedily drinketh in water. He that hath beheld what quantity of lead the test of saltless ashes will imbibe, upon the refining of silver, hath encouragement to think it will do very much more in water.[3]

5. Of white powder, and such as is discharged without report,[4] there is no small noise in the world; but how far agreeable unto truth, few, I perceive, are able to determine. Herein therefore, to satisfy the doubts of some and amuse the credulity of others, we first declare, that gunpowder consisteth of three ingredients, saltpetre, small-coal, and brimstone.[5]

[3] *Nevertheless, &c.*] Added in 2nd edition.

[4] 5. *Of white powder, &c.*] The nearest approach to *white powder* is the *fulminating powder*, in which carbonate of potash is substituted for charcoal: the composition being three parts of nitre, two of carbonate of potash, and one of sulphur.—*Ure's Dictionary of Chemistry.*

But this detonates more loudly than gunpowder. The *error* which it was our author's object to correct here, was that of expecting an *effective* gunpowder (of whatever colour) which should be "without report." He justly observes, that, even admitting the probability of making a "white powder,"—"and such an one as may give no report,"—it would "be of little force, and the effects thereof no way to be feared."

[5] *we first declare, &c.*] The account here given of gunpowder is upon the whole accurate; especially if we allow for the unsettled state of philosophical language at that time, which makes it sometimes difficult to feel assured of Sir Thomas's precise meaning. He was evidently aware of the necessity of employing *pure ingredients* in the composition of gunpowder; observing that "powder which is made of impure and greasy petre hath but a weak emission, and giveth a faint report;" and again, "that the best way to alter the noise and strength of the discharge, consists in the quality of the nitre." He assigns, with sufficient correctness, to its constituents their respective share in the general results, when he ascribes to the charcoal the "quick *accension*, [ignition,]" to the sulphur the "piercing and powerful firing," and to the nitre the "force and the report."—Modern experiment has shown that the detonation or explosion of gunpowder is attributable to the nitre, when combined with inflammable substances, viz. the sulphur and charcoal; and arises from the sudden extrication, by combustion, of nitrogen and carbonic acid gases, which expand to a volume about two thousand times greater than that originally occupied by the powder.—The opinions of Cardan and Snellius, quoted by our author, as to the degree of expansion, are erroneous. In describing the mixture of the three ingredients of gunpowder, Sir Thomas has named proportions very different from those now adopted. Barrow informs us, that the Chinese soldiery make their gunpowder (for it is there the duty of every soldier to prepare his own) in the proportion of 50lbs. of nitre to 25lbs. each of sulphur and charcoal: but the modern practice is to employ about 75 of nitre and 15 (or 16) of charcoal to 10 (or 9) of sulphur; varying the relations between the two last, according as the object is to produce a powder of greater durability or of greater strength; more usually the sulphur has been increased, and the carbon lessened—in order to obtain a more lasting article, by a slight sacrifice of strength—which may readily be compensated by increasing the charge.

Saltpetre, although it be also natural and found in several places, yet is that of common use an artificial salt, drawn from the infusion of salt earth, as that of stales, stables, dove-houses, cellars, and other covered places,[6] where the rain can neither dissolve, nor the sun approach to resolve it: brimstone is a mineral body of fat and inflammable parts, and this is either used crude, and called *sulphur vive*, and is of a sadder colour, or, after depuration, such as we have in magdaleons[7] or rolls, of a lighter yellow: small-coal[7] is known unto all, and for this use is made of sallow, willow, alder, hazel, and the like:—which three, proportionably mixed, tempered, and formed into granulary bodies, do make up that powder which is in use for guns.

Now all these, although they bear a share in the discharge, yet have they distinct intentions, and different offices in the composition. From brimstone proceedeth the piercing and powerful firing; for small-coal and petre together will only spit, nor vigorously continue the ignition. From small-coal ensueth the black colour and quick accension; for neither brimstone nor petre, although in powder, will take fire like small-coal, nor will they easily kindle upon the sparks of a flint; as neither will camphor, a body very inflammable; but small-coal is equivalent to tinder, and serveth to light the sulphur; it may also serve to diffuse the ignition through every part of the mixture; and being of more gross and fixed parts, may seem to moderate the activity of saltpetre, and prevent too hasty rarefaction.[8] From saltpetre proceedeth the force and the report; for sulphur and small-coal mixed will not take fire with noise or exilition,[9] and powder which is made of impure and greasy petre hath but a weak emission,

6 *Saltpetre, although it be also natural, &c.*] Native saltpetre, or nitre, *(nitrate of potash)* occurs in crusts and capillary crystals, in Spain, France, Italy, and Hungary; in Arabia, Persia, and India; at the Cape of Good Hope, in the mountains of Kentucky, and near Lima in South America. But not being naturally produced in sufficient quantity, it is obtained artificially, in what are termed *nitre-beds*, as is described by Thenard, (*Traité de Chimie*, ii, 511.

7 *small-coal.*] The old term for charcoal. For *magdaleon*, see note at p. 319.

8 *It may also, &c.*] Added in 2nd edition. That charcoal serves as a diffusing medium to facilicate ignition is true; but it is not easy to see how it can operate to "moderate the activity of saltpetre."

9 *exilition.*] "The act of springing out suddenly." The present passage is Johnson's sole authority.

and giveth a faint report. And therefore, in the three sorts of powder, the strongest containeth most saltpetre, and the proportion thereof is about ten parts of petre, unto one of coal and sulphur.

But the immediate cause of the report is the vehement commotion of the air, upon the sudden and violent eruption of the powder; for that being suddenly fired, and almost altogether, upon this high rarefaction requireth by many degrees a greater space than before its body occupied; but finding resistance, it actively forceth his way, and by concussion of the air occasioneth the report. Now with what violence it forceth upon the air, may easily be conceived, if we admit, what Cardan affirmeth, that the powder fired doth occupy an hundred times a greater space than its own bulk; or rather what Snellius more exactly accounteth, that it exceedeth its former space no less than 12500 times. And this is the reason not only of this fulminating report of guns, but may resolve the cause of those terrible cracks, and affrighting noises of heaven;[1] that is, the nitrous and sulphureous exhalations, set on fire in the clouds; whereupon requiring a larger place, they force out their way, not only with the breaking of the cloud, but the laceration of the air about it. When, if the matter be spirituous, and the cloud compact, the noise is great and terrible: if the cloud be thin, and the

1 *And this is the reason, &c.*] In his comparison of gunpowder with lightning, our author proposes an opinion which was maintained by his great contemporary, Dr. Wallis; who considered their effects so similar, that they might, without hesitation, be ascribed to the same cause. The discovery of electricity, and the identity of lightning with the electric fluid was reserved for a century later:—but the philosophy of *sound* is substantially the same in both cases; for, although the *immediate* results, of the ignition of gunpowder and of the discharge of electric fluid, are directly opposite,—being *rarefaction* in the one case, by the evolution of gases, and in the other *condensation* by the combination of other gases; and although the *first* results on the surrounding atmosphere are also opposite,—the air in the latter case *advancing* in order to occupy the vacuum created by condensation, and in the former *retreating* in order to afford the space required by rarefaction;—yet, the *subsequent* results in both cases are, alternate reactions of the particles of air, till its average density is regained. Hence it follows, that in both cases sound arises from the concussion, and consequent undulation (to use Professor Brande's term) occasioned by the respective explosions of gunpowder and of lightning.

If it be admitted, however, that the ideas of Sir Thomas on the point were not far from the truth; it must, on the other hand, be confessed that he has clothed them in language not only unphilosophical, but most ambiguous, when he speaks of "the *breaking* of the clouds, and *laceration* of the air,"—and of "the *matter* being *spirituous*, and the clouds compact;" or "the clouds *thin* and the *materials weak*."

materials weak, the eruption is languid, ending in corruscations and flashes without noise, although but at the distance of two miles; which is esteemed the remotest distance of clouds.[2] And, therefore, such lightnings do seldom any harm; and, therefore also, it is prodigious to have thunder in a clear sky, as is observably recorded in some histories.[3]

From the like cause may also proceed subterraneous thunders and earthquakes, when sulphureous and nitrous veins being fired, upon rarefaction do force their way through bodies that resist them.[4] Where, if the kindled matter be plentiful, and the mine close and firm about it, subversion of hills and towns doth sometimes follow: if scanty, weak, and the earth hollow, or porous, there only ensueth some faint concussion or tremulous and quaking motion. Surely, a main reason why the ancients were so imperfect in the doctrine of meteors, was their ignorance of gunpowder and fireworks, which best discover the causes of many thereof.[5]

Now, therefore, he that would destroy the report of powder, must work upon the petre; he that would exchange the colour, must think how to alter the small-coal; for the one, that is, to make white powder, it is surely many ways feasible: the best I know, is by the powder of rotten willows; spunk, or touch-wood prepared, might, perhaps, make it russet; and some, as Beringuccio affirmeth,* have promised to make it red: all which, notwithstanding, doth little concern the re-

* In his *Pyrotechnia.*

2 *the remotest distance of clouds.*] The average height of clouds scarcely exceeds a mile, or a mile and half. And many (especially thunder clouds), are suspended much lower; occasionally so low as apparently to touch the ground.

3 *And therefore, also, it is prodigious,* &c.] In the fall of meteoric stones, flashes of fire are seen proceeding from a cloud, and a loud rattling noise like thunder is heard. These circumstances, and the sudden stroke and detonation ensuing, long caused them to be confounded with an effect of lightning, and called thunderbolts. But one circumstance is enough to mark the difference: the flash and sound have been perceived occasionally to emanate from a *very small cloud* insulated in *a clear sky;* which never happens in a thunder storm, but which is undoubtedly intimately connected with their real origin.—*Herchel, Introductory Lecture,* p. 120.

4 *From the like cause,* &c.] Lemery, in the beginning of the eighteenth century, tried the following experiment. He mixed a considerable quantity of sulphur, and iron filings, with water, into a paste; enveloped it in a cloth, and buried it in the earth, which he rammed firmly about it. In a few hours the ground swelled, and cracked and sulphureous exhalations, accompanied with flame, made their appearance. In short he succeeded in producing, in miniature, an artificial volcano.

5 *thereof.*] This paragraph was added in the 2nd edition.

port; for that, as we have shewed, depends on another ingredient; and therefore, also, under the colour of black, this principle is very variable; for it is made not only by willow, alder, hazel, &c. but some above all commend the coals of flax and rushes, and some also contend the same may be effected with tinder.

As for the other, that is, to destroy the report, it is reasonably attempted but two ways; either by quite leaving out, or else by silencing the saltpetre. How to abate the vigour thereof, or silence its bombulation, a way is promised by Porta, not only in general terms by some fat bodies, but in particular by borax and butter mixed in a due proportion; which, saith he, will so go off as scarce to be heard by the discharger; and indeed plentifully mixed, it will almost take off the report, and also the force of the charge. That it may be thus made without saltpetre, I have met with but one example, that is, of Alphonsus, Duke of Ferrara, who, in the relation of Brassavolus and Cardan,* invented such a powder as would discharge a bullet without report.

That therefore white powder there may be, there is no absurdity: that also such a one as may give no report, we will not deny a possibilty. But this, however contrived, either with or without saltpetre, will surely be of little force, and the effects thereof no way to be feared; for as it amits of report, so will it of effectual exclusion, and so the charge be of little force which is excluded. For this much is reported of that famous powder of Alphonsus, which was not of force enough to kill a chicken, according to the delivery of Brassavolus: *jamque pulvis inventus est qui glandem sine bombo projicit, nec tamen vehementer ut vel pullum interficere possit.*

It is not to be denied there are ways to discharge a bullet, not only with powder that makes no noise, but without any powder at all; as is done by water and wind-guns, but these afford no fulminating report, and depend on single principles. And even in ordinary powder there are pretended other ways to alter the noise and strength of the discharge; and the best, if not only way, consists in the quality of the nitre: for as for other ways which make either additions or alterations

* *De Examine Salium.*

in the powder or charge, I find therein no effect.[6] That unto every pound of sulphur an adjection of one ounce of quicksilver, or unto every pound of petre, one ounce of *sal armoniac*, will much intend[7] the force, and consequently the report, as Beringuccio hath delivered, I find no success therein. That a piece of opium will dead the force and blow, as some have promised, I find herein no such peculiarity, no more than in any gum or viscose body; and as much effect there is to be found from scammony. That a bullet dipped in oil, by preventing the transpiration of air,[8] will carry farther and pierce deeper, as Porta affirmeth, my experience cannot discern.[9] That quicksilver is more destructive than shot, is surely not to be made out;[1] for it will scarce make any penetration, and discharged from a pistol will hardly pierce through a parchment. That vinegar, spirits of wine, or the distilled water of orange-peels, wherewith the powder is tempered, are more effectual unto the report than common water, as some do promise, I shall not affirm; but may assuredly more conduce unto the preservation and durance of the powder, as Cataneo * hath well observed.

That the heads of arrows and bullets have been discharged with that force, as to melt or grow red hot in their flight,[2] though commonly received, and taken up by Aristotle in his *Meteors*, is not so easily allowable by any who shall consider, that a bullet of wax will mischief without melting; that an arrow or bullet discharged against linen or paper does not set them on fire; and hardly apprehend how[3] an iron should

* *Avertimenti intorno a un Bombardiero.*

6 *for other ways, &c.*] Quicklime, well dried and pulverized, is said, by the French translator of Henry's Epitome of Chemistry, to increase the explosive effect of gunpowder.

7 *intend.*] Make more intense.

8 *preventing the* transpiration *of air.*] Its *escape* between the bullet and the side of the barrel. The definition of the term by Johnson, seems quite inapplicable to the present passage, though he cites it as his authority.

9 *That a bullet, &c.*] If the bullet, e. pecially a tampin [*tampion*] thus dipt, [ot fitt the peece, soe as to be ramd in; this a most certaine experiment, *mihi crede experto.*—*Wr.*

1 *not to be made out.*] I believe that of Porta concerning quicksilver, yf hee bee rightly understood: but hee did wel to put itt in such obscure terms, least itt should prove too pernicious.—*Wr.*

2 *That the heads of arrows and bullets, &c.*] If a ball strike a plate of iron, it will be broken in pieces, and the pieces often found in a nearly fused state. But this heat is generated by the percussion, not by the motion.

3 *and hardly apprehend how.*] "Neither will any readily apprehend how, &c."

grow red hot, since the swiftest motion at hand will not keep one red that hath been red by fire: as may be observed in swinging a red hot iron about, or fastening it into a wheel, which, under that motion, will sooner grow cold than without it. That a bullet also mounts upward upon the horizontal or point-blank discharge, many artists do not allow; who contend that it describeth a parabolical and bowing line by reason of its natural gravity inclining it always downward.[4]

But, beside the prevalence from saltpetre,[5] as master ingredient in the mixture, sulphur may hold a greater use in the composition, and further activity in the exclusion, than is by most conceived. For sulphur *vive* makes better powder than common sulphur, which nevertheless is of a quick accension. For small-coal, saltpetre, and camphor, made into powder will be of little force, wherein notwithstanding there wants not the accending ingredient. And camphor, though it flame well, yet will not flush so lively, or defecate saltpetre, if you inject it thereon, like sulphur, as in the preparation of *sal prunellæ*. And, lastly, though many ways may be found to light this powder, yet is there none I know to make a strong and vigorous powder of saltpetre, without the admixtion of sulphur. Arsenic, red and yellow, that is, orpiment and sandarach,[6] may, perhaps, do something, as being inflammable and containing sulphur in them; but containing also a salt, and mercurial mixtion, they will be of little effect; and white or crystalline arsenic of less, for that being artificial and sublimed with salt, will not endure flammation.

This antipathy or contention between saltpetre and sulphur upon an actual fire, in their complete and distinct bodies, is also manifested in their preparations, and bodies which invisibly contain them. Thus in the preparation of *crocus me-*

[4] *That the heads, &c.*] Added in the 2nd edition.

[5] *prevalence, &c.*] Edit. 1646 reads, "prevalence to report from saltpetre by some antipathy or incummiscibility therewith upon the approach of fire."

[6] *Sandarach.*] Nota differentiam inter Σανδαραχην et Σανδαραχην quam facili errore sed maximo vitæ periculo omittunt quidam medicastri: vide notas meas in voce apud eruditissimum Gorrhæum. Cum χ scriptum, significat, *gummi Juniperi*; cum χ *auripigmentum*; —primum salutare: secundum deleterium. Σανδαραξ etiam est vernigo pictoris quam e gummi Juniperi conficiunt; Σανδαραχη autem est, aliis Corinthus, aliis Erithace, aliis Propolis, apum cibus, sed amari saporis, in favis reperitur seorsim a melle positus: Græci onomastici hic muti sunt.—*W'r.*

tallorum, the matter kindleth and flusheth like gunpowder; wherein, notwithstanding, there is nothing but antimony[7] and saltpetre. But this may proceed from the sulphur of antimony not enduring the society of saltpetre; for after three or four accensions, through a fresh addition of petre, the powder will flush no more, for the sulphur of the antimony is quite exhaled. Thus iron in *aqua fortis* will fall into ebullition, with noise and emication, as also a crass and fumid exhalation, which are caused from this combat of the sulphur of iron, with the acid and nitrous spirits of *aqua fortis*. So is it also in *aurum fulminans*, or powder of gold dissolved in *aqua regis*, and precipitated with oil of tartar, which will kindle without an actual fire, and afford a report like gunpowder; that is, not as Crollius * affirmeth, from any antipathy between *sal armoniac* and tartar, but rather between the nitrous spirits of *aqua regis*, commixed *per minima* with the sulphur of gold, as Sennertus hath observed.

6. That coral (which is a *lithophyton*, or stone-plant, and groweth at the bottom of the sea) is soft under water, but waxeth hard in the air, although the assertion of Dioscorides, Pliny, and consequently Solinus, Isidore, Rueus, and many others,[8] and stands believed by most, we have some reason to doubt, especially if we conceive with common believers, a total softness at the bottom, and this induration to be singly made by the air, not only from so sudden a petrifaction and strange induration, not easily made out from the qualities of air, but because we find it rejected by experimental enquiries. Johannes Beguinus, in his chapter of the Tincture of Coral, undertakes to clear the world of this error, from the express experiment of John Baptista de Nicole, who was overseer of the gathering of coral upon the kingdom of Tunis. "This gentleman," saith he, "desirous to find the nature of coral, and to be resolved how it groweth at the bottom of the sea, caused a man to go down no less than a hundred fathom, with express [direction] to take notice whether it were hard or soft in the place where it groweth. Who returning, brought in each

* *De Consensu Chymicorum.*

7 *Antimony.*] Sulphuret of antimony.

8 *many others.*] Ovid. Met. xv, 41. "Sic et *coralium* quo primum contigit auras, Tempore durescit; mollis fuit herba sub undis." JG.

hand a branch of coral, affirming it was as hard at the bottom as in the air where he delivered it. The same was also confirmed by a trial of his own, handling it a fathom under water before it felt the air." Boëtius, in his accurate tract, *De Gemmis*, is of the same opinion, not ascribing its concretion unto the air, but the coagulating spirits of salt, and lapidifical juice of the sea, which entering the parts of that plant, overcomes its vegetability, and converts it into a lapideous substance. And this, saith he, doth happen when the plant is ready to decay; for all coral is not hard, and in many concreted plants some parts remain unpetrified, that is, the quick and livelier parts remain as wood, and were never yet converted. Now, that plants and ligneous bodies may indurate under water without approachment of air, we have experiment in coralline, with many coralloidal concretions; and that little stony plant, which Mr. Johnson nameth *hippuris coralloides*, and Gesner, *foliis mansu arenosis*, we have found in fresh water, which is the less concretive portion of that element. We have also with us the visible petrification of wood in many waters, whereof so much as is covered with water converteth into stone; as much as is above it and in the air, retaineth the form of wood, and continueth as before.[9]

Now, though [1] in a middle way we may concede, that some are soft, and others hard, yet, whether all coral were first a woody substance, and afterwards converted, or rather some thereof were never such, but from the sprouting spirit of salt were able even in their stony natures to ramify and send forth branches, as is observable in some stones, in silver and metallic bodies, is not without some question. And such at least might some of those be, which Fiaravanti observed to grow upon bricks at the bottom of the sea, upon the coast of Barbary.[2]

[9] *and continueth, &c.*] Neere the banke of Harwel, two miles from Oxon, under a stile and bridge, is a draine or drill in a ditch, out of which I took diverse small stickes, some nearly incrustated, and some petrefied.—*Wr.*

[1] *Now, though, &c.*] Added in 3rd edit.

[2] 6. *That coral, &c.*] It must, in the very nature of things, be occasionally the fate of him who challenges the soundness of any received opinion—especially on subjects but little understood—to take his stand on ground not less hollow, and even to make his attack from a position equally untenable. Thus has it happened to our author in the present case. He justly denounces as erroneous, the popular opinion, "that coral is soft under water, but waxeth hard in the air;" but seems not in the slightest degree aware

7. We are not thoroughly resolved concerning porcelain [3] or china dishes, that according to common belief they are made of earth, which lieth in preparation about an hundred years under ground; for the relations thereof are not

of that much graver error, then prevalent, that it belongs to the mineral or vegetable, instead of the animal kingdom. But in this he erred not only with the highest authorities, but with *all*, both prior to, and contemporary with him. Nor was the true nature of coral ascertained till long after him. Many of the older naturalists regarded it as a mere stone, a mineral taking somewhat the form of a tree: others, and especially the early botanists, regarding its form rather than its material, pronounced it without hesitation, a tree, duly provided with *root, trunk, branches, and twigs;* and having observed the exterior (and most recently deposited) layer to be softer than those beneath it, they called it the *bark*. In 1703, the Count Marsigli, having had the opportunity of remarking the coral at the surface of the sea, throwing out from various points its radiated and flower-like inhabitants, the *polypi*, he congratulated himself as having completed the plant by the discovery of its *flowers*. No one doubted this opinion, till Peyssonel distinguished himself by the discovery, that these *flowers* were in fact animals. But the truth was received reluctantly by the French naturalists, till Guettard and Jussieu, sent by the *Academie des Sciences*, confirmed and fully established the fact. We owe, however, to the naturalists of Italy, principally, our knowledge of the structure and physiology of coral, as well as of its mode of growth. A hasty sketch may not be unacceptable to the reader.

Each coral, (that is, the entire habitation of *each* separate colony of *polypi*,) is a kind of *shrub*, or *tree* in miniature, about eighteen inches high, and one in diameter at the lower part of the *trunk*. Its base, by means of which, as by the *root*, the whole coral becomes firmly attached to the rock on which it grows, is spread out and flattened, like that of the larger *fuci*. At the height of a few inches from the base, the trunk throws out its *branches*, which again ramify into lesser ones, each terminated by a blunt, softer, extremity.

In structure, as well as form, the coral bears a resemblance to wood: especially in its successive layers, which, viewed in section, exhibit concentric rings, less and less close to each other, as they are more distant from the centre, like those of the trunk of a tree. The outer layer, which like the *bark* is always softer than those beneath it, is in fact the living part of the coral. On its surface are dispersed, here and there, irregularly, tubercles, having their orifice divided into eight *radii*; each tubercle being the mouth or entrance to the cell of a polype. This exterior surface or bark, is longitudinally furrowed with *striæ*, occasioned by tubes or canals running along the branches, and filled with a milky fluid.

The reproduction or growth of coral is thus effected:—The egg is thrown out of the tubercle before described; it falls, an embryo drop of coral-jelly, and becomes agglutinated to the rock or other substance which receives it. It spreads out upon the surface thereof; and from its centre soon arises a tubercle, which at length opens in the middle, and throws out its *tentacula* in search of nutriment, or for the purpose of respiration. Its growth becomes more and more rapid. In its interior is secreted the calcareous material which becomes *coral*. Thus it shoots up and branches out, throwing out fresh polypi at various places. The extremities of its branches, being the points of recent formation, are always softer than the other parts; which may have led to the erroneous supposition that it is soft under water, and hardens by exposure to the air.

The coral is supposed to attain its full growth in about ten years: and to lose gradually the brilliancy of its red colour by age.

It is found principally in the Mediterranean and Red Seas, at various depths from six to seven hundred feet below the surface of the sea.

The plant mentioned, is probably a *chara*, (*vulgaris* or *hispida*;) but the crust is only a calcareous deposit.

That which our author calls *petrifaction* of wood, is in fact merely incrustation.

[3] *We are not, &c.*] This account of the Chinese method of making porcelain

only diverse but contrary, and authors agree not herein. Guido Pancirollus will have them made of egg-shells, lobster-shells, and gypsum laid up in the earth the space of eighty years: of the same affirmation is Scaliger, and the common opinion of most. Ramuzius, in his *Navigations*, is of a contrary assertion; that they are made out of earth, not laid under ground, but hardened in the sun and wind, the space of forty years. But Gonzales de Mendoza, a man employed into China from Philip the second, king of Spain, upon enquiry and ocular experience, delivered a way different from all these. For enquiring into the artifice thereof, he found they were made of a chalky earth; which, beaten and steeped in water, affordeth a cream or fatness on the top, and a gross subsidence at the bottom; out of the cream or superfluitance, the finest dishes, saith he, are made; out of the residence thereof, the coarser; which being formed, they gild or paint, and, not after an hundred years, but presently, commit unto the furnace. This, saith he, is known by experience, and more probable than what Odoardus Barbosa hath delivered, that they are made of shells, and buried under earth an hundred years. And answerable in all points hereto, is the relation of Linschotten, a diligent enquirer, in his Oriental Navigations. Later confirmation may be had from Alvarez the Jesuit, who lived long in those parts, in his relations of China: that porcelain vessels were made but in one town of the province of Chiamsi; that the earth was brought out of other provinces, but, for the advantage of water, which makes them more polite and perspicuous, they were only made in this; that they were wrought and fashioned like those of other countries, whereof some were tinted blue,

is accurate. As to the materials of which it was composed, Reaumur made some researches in the early part of the eighteenth century; the result of which was an opinion that true porcelain is made of two ingredients—the one capable of resisting the most violent heat that can be raised; while the other (which gives to porcelain its transparency,) melts into glass. His conclusions were confirmed by Father d'Entrecolles, a French missionary in China, who sent, some time after, a memoir to the academy, describing the mode followed by the Chinese in the manufactory of their porcelain. Two substances are employed by them, the one called *kaolin*, and the other *petunse*. It is now known that *kaolin* is what we call porcelain-clay, and that *petunse* is a fine white felspar. Felspar is fusible in a violent heat, but porcelain-clay is refractory in the highest temperatures that we have it in our power to produce in furnaces.

some red, others yellow, of which colour only they presented unto the king.[4]

The latest account hereof may be found in the voyage of the Dutch ambassador, sent from Batavia unto the emperor of China, printed in French, 1665; which plainly informeth, that the earth, whereof porcelain dishes are made, is brought from the mountains of Hoang, and being formed into square loaves, is brought by water, and marked with the emperor's seal; that the earth itself is very lean, fine, and shining like sand; and that it is prepared and fashioned after the same manner which the Italians observe in the fine earthen vessels of Faventia or Fuenca; that they are so reserved concerning that artifice, that it is only revealed from father unto son; that they are painted with indigo,[5] baked in a fire for fifteen days together, and with very dry and not smoking wood: which when the author had seen, he could hardly contain from laughter at the common opinion above rejected by us.

Now if any enquire, why, being so commonly made, and in so short a time, they are become so scarce, or not at all to be had; the answer is given by these last relators, that under great penalties it is forbidden to carry the first sort out of the country. And of those surely the properties must be verified, which by Scaliger and others are ascribed unto china dishes:—that they admit no poison, that they strike fire, that they will grow hot no higher than the liquor in them ariseth. For such as pass amongst us, and under the name of the finest, will only strike fire, but not discover aconite, mercury, or arsenic; but may be useful in dysenteries and fluxes beyond the other.

8.[7] Whether a carbuncle (which is esteemed the best and biggest of rubies) doth flame in the dark,[8] or shine like a

[4] *Later confirmation, &c*] Added in 2nd edition.

[5] *indigo.*] Cobalt?

[6] *The latest account, &c.*] Added in the 6th edition.

[7] § 8.] This, and the next paragraph, were added in the 2nd. edit.

[8] *Whether a carbuncle, &c.*] That which Sir Thomas much doubted, has since been subjected to the test of repeated observation, and many very curious experiments, by which the phosphorescence of the diamond, sapphire, ruby, and topaz, as well as of many minerals and metals, and various other bodies, is fully established. Mr. Wedgewood has treated the subject at large in a paper in the 82nd volume of the *Philosophical Transactions.* This luminous property, which seems to be strictly phosphoric, is made apparent by subjecting the body in question to heat, in various ways. Several fluids

coal in the night, though generally agreed on by common believers, is very much questioned by many. By Milius, who accounts it a vulgar error: by the learned Boëtius, who could not find it verified in that famous one of Rodolphus, which was as big as an egg, and esteemed the best in Europe. Wherefore, although we dispute not the possibility, (and the like is said to have been observed in some diamonds,) yet, whether herein there be not too high an apprehension, and above its natural radiancy, is not without just doubt: however it be granted a very splendid gem, and whose sparks may somewhat resemble the glances of fire, and metaphorically deserve that name. And, therefore, when it is conceived by some, that this stone in the breastplate of Aaron respected the tribe of Dan, who burnt the city of Laish, and Sampson of the same tribe, who fired the corn of the Philistines, in some sense it may be admitted, and is no intolerable conception.

As for that Indian stone that shined so brightly in the night, and pretended to have been shewn to many in the court of France, as Andreus Chioccus hath declared out of Thuanus, it proved but an imposture, as that eminent philosopher, Licetus,* hath discovered; and, therefore, in the revised editions of Thuanus it is not to be found. As for the phosphorus or Bononian stone,† which exposed unto the sun, and then closely shut up, will afterwards afford a light in the dark; it is of unlike consideration, for that requireth calcination or reduction into a dry powder by fire, whereby it imbibeth the light in the vaporous humidity of the air about it, and therefore maintaineth its light not long, but goes out when the vaporous vehicle is consumed.

9.[9] Whether the *ætites* or eagle-stone[1] hath that eminent

* *De Quæsit. per Epistolas.*

† *De Lapide Bononiense.*

(oils, spermaceti, butter, &c.) are luminous at or below the boiling point: minerals and other bodies become so by being sprinkled on a thick plate of iron, heated just below visible redness. The gems, and several of the harder minerals, emit their light upon attrition.

[9] § 9.] This and the following paragraphs were first added in 3rd edition.

[1] *the ætites, or eagle-stone.*] A kind of hollow *geodes* of oxide of iron, often mixed with a larger or smaller quantity of *silex* and *alumina*, containing in their cavity some concretions, which rattle on shaking the stone. It is of a dull pale colour, composed of concentric layers of various magnitudes, of an oval or polygonal form, and often polished. Eagles

property to promote delivery or restrain abortion, respectively applied to lower or upward parts of the body, we shall not discourage common practice by our question; but whether they answer the account thereof, as to be taken out of eagle's nests, co-operating in women into such effects, as they are conceived toward the young eagles: or whether the single signature of one stone included in the matrix and belly of another, were not sufficient at first, to derive this virtue of the pregnant stone upon others in impregnation, may yet be farther considered. Many sorts there are of this rattling stone, beside the *geodes*, containing a softer substance in it. Divers are found in England, and one we met with on the sea-shore, but because many of eminent use are pretended to be brought from Iceland, wherein are divers eyries of eagles; we cannot omit to deliver what we received from a learned person in that country.* *Ætites an in nidis aquilarum aliquando fuerit repertus, nescio. Nostra certe memoria, etiam inquirentibus non contigit invenisse, quare in fabulis habendum.*

10. Terrible apprehensions, and answerable unto their names, are raised of fairy stones and elve's spurs,[2] found commonly with us in stone, chalk, and marl-pits, which, notwithstanding, are no more than *echinometrites*, and *belemnites*, the sea hedge-hog, and the dart-stone, arising from some silice ous roots, and softer than that of flint, the master-stone lying more regularly in courses, and arising from the primary and strongest spirit of the mine. Of the *echinites*, such as are found in chalk-pits are white, glassy, and built upon a chalky inside; some, of an hard and flinty substance, are found in stone-pits and elsewhere. Common opinion commendeth them for the stone, but are most practically used against films in horses' eyes.

11. Lastly, he must have more heads than Rome had hills, that makes out half of those virtues ascribed unto stones, and

* Theodore Jonas, Hitterdalæ pastor. (See vol. iv, p. 261.)

were said to carry them to their nests, whence the name; and superstition formerly ascribed wonderful virtues to them.

[2] *Terrible apprehensions, &c.*] Though he denounces the popular superstitions attached to these *fairy-stones, &c.* our author, in this paragraph, gives additional evidence that he had fallen into another error of his day, in confounding *fossils* with *minerals.*—*See Mr. Brayley's note*, p. 275.

their not only medical, but magical properties, which are to be found in authors of great name. In Psellus, Serapion, Evax, Albertus, Aleazar, Marbodeus; in Maiolus, Rueus, Mylius and many more.[3]

That *lapis lazuli* hath in it a purgative faculty we know; that bezoar is antidotal, *lapis judaicus* diuretical, coral antepileptical, we will not deny. That cornelians, jaspis, heliotropes, and blood-stones may be of virtue to those intentions they are employed, experience and visible effects will make us grant. But that an amethyst prevents inebriation; that an emerald will break if worn in copulation; that a diamond laid under the pillow, will betray the incontinency of a wife; that a sapphire is preservative against enchantments; that the fume of an agate will avert a tempest, or the wearing of a chrysophrase make one out of love with gold, as some have delivered, we are yet, I confess, to believe, and in that infidelity are likely to end our days. And therefore, they which, in the explication of the two beryls upon the ephods, or the twelve stones in the *rational* or breastplate[4] of Aaron, or those twelve which garnished the wall of the Holy City in the Apocalypse, have drawn their significations from such as these, or declared their symbolical verities from such traditional falsities, have surely corrupted the sincerity of their analogies, or misunderstood the mystery of their intentions.

Most men conceive that the twelve stones in Aaron's breastplate made a jewel surpassing any, and not to be parallelled; which, notwithstanding, will hardly be made out from the description of the text; for the names of the tribes were engraven thereon, which must notably abate their lustre. Besides, it is not clear made out that the best of gems, a diamond, was amongst them;[5] nor is it to be found in the list thereof, set down by the Jerusalem targum, wherein we

[3] *many more.*] And above all Cardan in *De variet.* ubique superstitiosissime. —*Wr.*

[4] Rational *or breastplate.*] "Rationale *quoque judicii facies, &c.* Exod. xxviii, 15.

[5] *not clear made out, &c.*] The doubt here intimated, whether the true diamond was among the stones of the breastplate, has been expressed by commentators, on the ground that it is too hard to be engraved. Calmet, in his figure of the Pectoral, omits it. Rosenmüller however asserts, on the testimony of Büsching, the existence of engraved diamonds of great antiquity. A diamond of sufficient size to admit the engraving, must have equaled the largest modern specimens. Like many other such questions, it admits of discussion, but not of solution.

find the darker stones of sardius, sardonyx, and jasper; and if we receive them under those names wherein they are usually described, it is not hard to contrive a more illustrious and splendent jewel. But being not ordained for mere lustre by diaphanous and pure tralucencies, their mysterious significations became more considerable than their gemmary substances; and those, no doubt, did nobly answer the intention of the institutor. Beside, some may doubt whether there be twelve distinct species of noble tralucent gems in nature,[6] at least yet known unto us, and such as may not be referred unto some of those in high esteem among us, which come short of the number of twelve; which to make up, we must find out some others to match and join with the diamond, beryl, sapphire, emerald, amethyst, topaz, chrysolite, jacinth, ruby, and, if we may admit it in this number, the oriental granat.[7]

6 *whether there be twelve, &c.*] If we are to understand, by the terms "*noble* tralucent gems," those only which were formerly called *precious stones*, we shall scarcely enumerate more than two distinct species, viz., the diamond and sapphire; for the oriental ruby, amethyst, and topaz, are not distinct in species from the sapphire; and the crysoberyl and spinelle ruby, though distinct species, are inferior in hardness and brilliancy to stones of the first class. But if we extend our range, as Sir Thomas has done, to gems of lesser value, though we confine ourselves to such as are, scientifically speaking, distinct species, and so omit several of the most splendid and valuable, as being only varieties, we may still enlarge his list—for example: supposing his "chrysolite" to refer to the common chrysolite or *peridot*, and his "oriental granat" to be the *garnet;* we may add the *chrysoberyl*, or *oriental chrysolite;* the *almandine garnet*, or *carbuncle* of the ancients, (which he seems to consider as only a ruby of greater size and beauty;) the precious *tourmaline*, (*lyncurium* of the ancients,) and perhaps the *chrysoprase;* not to mention *opal* and *torquoise*.

7 *Most men, &c.*] This whole paragraph was added in the 6th edition.

CHAPTER VI.

Of sundry tenets concerning vegetables or plants, which, examined, prove either false or dubious:—of mandrakes; that cinnamon, ginger, cloves, mace, are but the parts or fruits of the same tree; that miseltoe is bred upon trees, from seeds which birds let fall thereon; of the rose of Jericho, that flowereth every year upon Christmas Eve; of Glastonbury thorn; that Sferra Cavallo hath a power to break or loosen iron; that bays preserve from the mischief of lightning and thunder; that bitter almonds are preservatives against ebriety.

1. MANY molas and false conceptions there are of mandrakes.[8] The first, from great antiquity, conceiveth the root thereof resembleth the shape of man; which is a conceit not to be made out by ordinary inspection, or any other eyes, than such as, regarding the clouds, behold them in shapes conformable to pre-apprehensions.

Now, whatever encourageth the first invention, there have not been wanting many ways of its promotion. The first a *catechrestical* and far-derived similitude it holds with man; that is, in a bifurcation or division of the root into two parts, which some are content to call thighs; whereas, notwithstanding, they are ofttimes three, and when but two, commonly so complicated and crossed, that men, for this deceit, are fain to effect their design in other plants. And as fair a resemblance is often found in carrots, parsnips, briony, and

[8] *Many molas, &c.*] An excellent digest of the various and absurd speculations and conjectures respecting the mandrake and its properties will be found in *Dr. Harris's Dictionary of the Natural History of the Bible.*

The Abbe Mariti, in his *Travels*, vol. ii, p. 195, thus describes the mandrake. "At the village of St. John, in the mountains, about six miles south-west from Jerusalem, this plant is found at present, as well as in Tuscany. It grows low like lettuce, to which its leaves have a great resemblance, except that they have a dark green colour. The flowers are purple, and the root is for the most part forked. The fruit, when ripe in the beginning of May, is of the size and colour of a small apple, exceedingly ruddy, *and of a most agreeable odour.* Our guide thought us fools for suspecting it to be unwholesome. He ate it freely himself; and it is generally valued by the inhabitants as exhilarating their spirits, and a provocative to venery."

many others. There are, I confess, divers plants which carry about them not only the shape of parts, but also of whole animals; but surely not all thereof, unto whom this conformity is imputed. Whoever shall peruse the signatures of Crollius, or rather the *Phytognomy* of Porta, and strictly observe how vegetable realities are commonly forced into animal representations, may easily perceive in very many, the semblance is but postulatory, and must have a more assimilating fancy than mine to make good many thereof.

Illiterate heads have been led on by the name, which, in the first syllable,* expresseth its representation; but other have better observed the laws of etymology, and deduced it from a word of the same language, because it delighteth to grow in obscure and shady places; which derivation, although we shall not stand to maintain, yet the other seemeth answerable unto the etymologies of many authors, who often confound such nominal notations. Not to enquire beyond our own profession, the Latin physicians, which most adhered unto the Arabic way, have often failed herein; particularly Valescus de Taranta, a received physician, in whose *Philonium*, or *Medical Practice*, these may be observed: *Diarrhea*, saith he, *quia pluries venit in die.*[9] *Herisepela, quasi hærens pilis; emmorrohis, ab emach, sanguis, et morrohis, quod est cadere. Lithargia, à litos, quod est oblivio, et targus, morbus. Scotomia, à scotus, quod est videre, et mias, musca. Opthalmia. ab opus Græcè, quod est succus, et talmon quod est oculus. Paralisis, quasi læsio partis. Fistula, à fos sonus, et stolon quod est emissio, quasi emissio soni vel vocis.* Which are derivations as strange, indeed, as the other, and hardly to be paralelled elsewhere: confirming not only the words of one language with another, but creating such as were never yet in any.

The received distinction and common notation by sexes,[1]

* Μάνδρα, *spelunca.*

9 *venit in die.*] Not unlike to that of εἰσαγωγὴ, which a wise man derived from (εἶσος and γωγους) or, as Calepin derives *aqua* from *à quà*, or as Minshew, *prospero* from *porro* and *spero*, where the long quantityes in the originals discover the follye of the derivations.—*Wr.*

1 *The received distinction, &c.*] Nearly a century elapsed after this paragraph was written, before the distinction adverted to was well understood and explained. The real use of the *stamina* of plants, to fertilize the seed, though suspected by Ray, and others, was not fully

hath also promoted the conceit; for true it is, that herbalists, from ancient times, have thus distinguished them; naming that the male, whose leaves are lighter, and fruit and apples rounder; but this is properly no generative division, but rather some note of distinction in colour, figure, or operation. For though Empedocles* affirm, there is a mixed and undivided sex in vegetables, and Scaliger, upon Aristotle, doth favorably explain that opinion, yet will it not consist with the common and ordinary acceptation, nor yet with Aristotle's definition. For, if that be male which generates in another, that female which procreates in itself; if it be understood of sexes conjoined, all plants are female; and if of disjoined and congressive generation, there is no male or female in them at all.[2]

But the Atlas or main axis which supported this opinion, was daily experience, and the visible testimony of sense. For many there are, in several parts of Europe, who carry about roots and sell them unto ignorant people, which handsomely make out the shape of man or woman. But these are not productions of nature, but contrivances of art, as divers have noted, and Matthiolus plainly detected; who learned this way of trumpery from a vagabond cheater lying under his cure for the French disease. His words are these, and may determine the point: *Sed profectò vanum et fabulosum, &c.;* but this is vain and fabulous, which ignorant people and simple women believe; for the roots which are carried about by imposters to deceive unfruitful women, are made of the roots of canes, briony and other plants; for in these, yet fresh and virent,

* *De Plantis.*

established till Linnæus, in 1732, published, in his *Fundamenta et Philosophia Botanica*, the results of his long and laborious consideration of the opinions which had preceded him, combined with his own patient and acute investigation of vegetable phenomena, put to the test of various ingenious experiments. He proved that "flowers are always furnished, either in the same individual, or two of the same species," with stamens and pistils,—the latter containing the seeds,—the former the pollen or dust which fertilizes and perfects it. These were therefore called the male and female parts of fructification; and in those orders in which one plant contains stamens only, and another only the pistil—the one was called the male, the other the female plant. This discovery he made the foundation of the artificial system, which, under the title of the *Linnæan system* of botany, became so universally popular.

[2] *no male, &c.*] The name of male and female in plants is onlye tralatitious and similitudinarye, that which beares fruite beeing for distinction sake called female, and that which beares none the male.—*Wr.* See preceding note.

they carve out the figures of men and women, first sticking therein the grains of barley or millet where they intend the hair should grow; then bury them in sand until the grains shoot forth their roots, which, at the longest, will happen in twenty days; they afterwards clip and trim those tender strings in the fashion of beards and other hairy teguments. All which, like other impostures, once discovered, is easily effected, and in the root of white briony may be practised every spring.

What is therefore delivered in favour thereof, by authors, ancient or modern,[3] must have its root in tradition, imposture, far derived similitude, or casual and rare contingency. So may we admit of the epithet of Pythagoras, who calls it *anthropomorphus,* * and that of Columella, who terms it *semihomo;* more applicable unto the man-orchis, whose flower represents a man. Thus is Albertus to be received, when he affirmeth that mandrakes represent mankind, with the distinction of either sex.† Under these restrictions may those authors be admitted, which for this opinion are introduced by Drusius,[4] nor shall we need to question the monstrous root of briony, described in Aldrovandus.‡

The second assertion concerneth its production.[5] That it naturally groweth under gallowses and places of execution, arising from fat or urine that drops from the body of the dead; a story somewhat agreeable unto the fable of the ser-

* *Orchis anthropomorphus, cujus icon in Kircheri Magia parastatica.*
† *De Mandragora.* ‡ *De Monstris.*

[3] *What is therefore delivered, &c.*]

Mark, how that rooted mandrake wears
His human feet, his human hands!
Oft, as his ghastly form he rears,
Aghast the frighted plowman stands!
Langhorne's Beeflower.

[4] *Drusius.*] Instead of the remaining part of the sentence, *Ed.* 1646 reads, "As David Camius, Moses filius Namanis, and Abenezra Hispanus."

[5] *The second assertion, &c.*] Here again is our author the victim of the false philosophy of his age. The immortal Harvey in his *De Generatione*, struck the first blow at the root of the irrational system called *equivocal generation*, when he laid down his brief but most pregnant law, *omnia ex ovo.* But the belief transmitted from antiquity, that living beings generated spontaneously from putrescent matter, long maintained its ground; and a certain modification of it is even still advocated by some naturalists of the greatest acuteness. The first few pages of the volume entitled *Insect Transformations*, (in the *Library of Entertaining Knowledge*), are occupied by a very interesting investigation of this subject.

In the midst of his errors, however, Sir Thomas makes a remark, which has been verified and confirmed by much more widely extended observation since, viz.: "that hogs, sheep, goats, hawks, hens, and others, have one peculiar and proper kind of vermin." A vast number of species of *pulex* and *pediculus* are now known; and I am not aware that any instance has occurred of the same species being parasitic on different animals.

pent's teeth sowed in the earth by Cadmus; or rather, the birth of Orion, from the urine of Jupiter, Mercury, and Neptune. Now this opinion seems grounded on the former, that is, a conceived similitude it hath with man; and therefore from him, in some way, they would make out its production. Which conceit is not only erroneous in the foundation, but injurious unto philosophy in the superstruction; making putrefactive generations correspondent unto seminal productions, and conceiving in equivocal effects an univocal conformity unto the efficient. Which is so far from being verified of animals in their corruptive mutations into plants, that they maintain not this similitude in their nearer translation into animals. So when the ox corrupteth into bees, or the horse into hornets, they come not forth in the image of their originals. So the corrupt and excrementitious humours in man are animated into lice; and we may observe that hogs, sheep, goats, hawks, hens, and others, have one peculiar and proper kind of vermin; not resembling themselves according to seminal conditions, yet carrying a settled and confined habitude, unto their corruptive originals. And therefore come not forth in generations erratical, or different from each other; but seem specifically and in regular shapes to attend the corruption of their bodies, as do more perfect conceptions the rule of seminal productions.

The third affirmeth the roots of mandrakes do make a noise, or give a shriek, upon eradication;[6] which is indeed ridiculous, and false below confute; arising, perhaps, from a small and stridulous noise, which being firmly rooted, it maketh upon divulsion of parts. A slender foundation for such a vast conception; for such a noise we sometimes observe in other plants, in parsnips, liquorice, eryngium, flags, and others.

The last concerneth the danger ensuing; that there follows an hazard of life to them that pull it up; that some evil fate pursues them, and they live not very long after. Therefore the attempt hereof, among the ancients, was not in ordinary

6 *The third affirmeth, &c.*] To this Shakspeare alludes:—

. . . . . Wherefore should I curse them?
Would curses kill, as doth the mandrake's groan,
I would invent as bitter-searching terms,
As curs'd, as harsh, as horrible to hear.—*Jef.*

way; but, as Pliny informeth, when they intended to take up the root of this plant, they took the wind thereof, and with a sword describing three circles about it, they digged it up, looking toward the west. A conceit, not only injurious unto truth, and confutable by daily experience, but somewhat derogatory unto the providence of God; that is, not only to impose so destructive a quality on any plant, but to conceive a vegetable, whose parts are useful unto many, should, in the only taking up, prove mortal unto any. To think he suffereth the poison of *Nubia* * to be gathered, *napellus*, aconite, and *thora*, to be eradicated, yet this not to be moved. That he permitteth arsenic and mineral poisons to be forced from the bowels of the earth, yet not this from the surface thereof. This were to introduce a second forbidden fruit, and enhance the first malediction, making it not only mortal for Adam to taste the one, but capital unto his posterity to eradicate or dig up the other.

Now what begot, at least promoted, so strange conceptions, might be the magical opinion hereof; this being conceived the plant so much in use with Circe, and therefore named *Circæa*,[7] (as Dioscorides and Theophrastus have delivered,) which being the eminent sorceress of elder story, and by the magic of simples believed to have wrought many wonders, some men were apt to invent, others to believe any tradition or magical promise thereof.

Analogous relations concerning other plants, and such as are of near affinity unto this, have made its current smooth, and pass more easily among us. For the same effect is also delivered by Josephus concerning the root *baaras;* by Ælian, of *cynospastus:* and we read in Homer the very same opinion concerning *moly*:

Μῶλυ δὲ μὶν καλέουσι θεοὶ, χαλεπὸν δὲ τ' ὀρύσσειν
Ἀνδράσί γε θνητοῖσι, θεοὶ δέ τε πάντα δύνανται.

The gods it *moly* call, whose root to dig away
Is dangerous unto man; but gods they all things may.

Now parallels or like relations alternately relieve each other; when neither will pass asunder, yet are they plausible

* *Granum Nubiæ.*

7 *Circæa.*] Enchanter's nightshade.

together; their mutual concurrences supporting their solitary instabilities.

Signaturists[8] have somewhat advanced it; who seldom omitting what ancients delivered, drawing into inference received distinctions of sex, not willing to examine its humane resemblance, and placing it in the form of strange and magical simples, have made men suspect there was more therein than ordinary practice allowed; and so became apt to embrace whatever they heard or read conformable unto such conceptions.

Lastly, the conceit promoteth itself: for concerning an effect whose trial must cost so dear, it fortifies itself in that invention; and few there are whose experiment it need to fear. For, what is most contemptible, although not only the reason of any head, but experience of every hand may well convict it, yet will it not by divers be rejected; for prepossessed heads will ever doubt it, and timorous beliefs will never dare to try it. So these traditions, how low and ridiculous soever, will find suspicion in some, doubt in others, and serve as tests or trials of melancholy and superstitious tempers for ever.

2. That cinnamon, ginger,[9] clove, mace, and nutmeg, are but the several parts and fruits of the same tree, is the common belief of those which daily use them; whereof to speak distinctly, ginger is the root of neither tree nor shrub, but of an herbaceous plant, resembling the water *fleur-de-lis*, as Garcias first described, or rather the common reed, as Lobelius since affirmed. Very common in many parts of India,[1]

[8] *Signaturists.*] Those who hold the doctrine, that plants bear certain marks and *signatures*, indicative of their qualities or properties.

[9] *ginger.*] *Amomum Zingiber, L.* or *Zingiber officinalis.*

[1] *of India.*] And in Europe, too, for itt hath been of old, and is lately found in Austria, at the foote of the mount Cognamus: vide *Helym's Austria*, p. 74. Germanice. There are two kindes of itt, white and brown, which I suppose differ only in age. Itt is commonly brought to us from China: to them from some upper parts in Tartary: and therefore some call itt *Radix Scythica:* but this is an equivocall name, proper to *glycyrisa*, but applicable to ginger and rhubarbe, which both come also from thence. Offended with the earthynes of green ginger, I causd choyce to bee made of the whitest; paring of the barke totally: then bruisd itt in a stone mortar into strings; then stewd itt on a gentle fire till the water was consumed from three pintes to a quarte (the pared ginger being but a quarter of a pound.) When wee thought the vertue wholy extracted, (which would have tincted a pottel of water sufficiently,) streyning away the ginger with some pressure, gentlye, they boyled the water into a syrup, whose

growing either from root or seed, which in December and January they take up, and, gently dried, roll it up in earth, whereby occluding[2] the pores, they conserve the natural humidity, and so prevent corruption.

Cinnamon is the inward bark of a cinnamon tree,[3] whereof the best is brought from Zeilan; this freed from the outward bark, and exposed unto the sun, contracts into those folds wherein we commonly receive it. If it have not a sufficient insolation[4] it looketh pale, and attains not its laudable colour; if it be sunned too long, it suffereth a torrefaction, and descendeth somewhat below it.

Clove seems to be either the rudiment of a fruit,[5] or the fruit itself, growing upon the clove tree, to be found but in few countries. The most commendable is that of the isles of Molucca; it is first white, afterward green, which beaten down and dried in the sun, becometh black, and in the complexion we receive it.

Nutmeg is the fruit of a tree[6] differing from all these, and as Garcias describeth it, somewhat like a peach; growing in divers places, but fructifying in the isle of Banda. The fruit hereof consisteth of four parts; the first, or outward part, is a thick and carnous covering like that of a walnut; the second, a dry and flosculous coat, commonly called mace; the third, a harder tegument or shell, which lieth under the mace; the fourth, a kernel included in the shell, which is the same we call nutmeg. All which, both in their parts and order of disposure, are easily discerned in those fruits which are brought in preserves unto us.[7]

vertues are such, after a meale, (the quantity of a spoonfull,) as noe dredg, powders, or lozenges, can equall in four times soe much: for by a gentle mixture and fermentation, itt corrects all crude humors and flatulencyes, abates not the salivation, as all hot spices doe, and never heates further then stomache only.

2 *occluding*]. Shutting up.

3 *Cinnamon, &c.*] The bark of *Laurus Cinnamomum*. The perfection of this spice depends on the tree being at a fit age, and on the relative proportion of the inner part of the bark, which is the sweetest and most fragrant.

4 *insolation.*] Exposure to the sun.

5 *either the rudiment, &c.*] Cloves are the calyces, with the embryo seed, of *caryophyllus aromaticus*, beaten from the tree, just after the delicate peach-blossom-coloured flowers have faded. The pungent quality is lessened if the seed is suffered to become more mature.

6 *Nutmeg, &c.*] This is an accurate description of the fruit of *myristaca moschata*, the nutmeg.

7 *in preserves, &c.*] Whereof my auncient friend, Mr. Paul Claphum, sent me a pot of two pounds.—*Wr.*

Little did "my auncient friend" suppose that his munificence would thus be immortalized!

Now if, because mace and nutmegs proceed from one tree, the rest must bear them company, or because they are all from the East Indies, they are all from one plant, the inference is precipitous, nor will there such a plant be found in the herbal of nature.

3. That *viscus arboreus*, or miseltoe, is bred upon trees from seeds, which birds, especially thrushes and ringdoves, let fall thereon, was the creed of the ancients, and is still believed among us, is the account of its production, set down by Pliny, delivered by Virgil, and subscribed by many more. If so, some reason must be assigned, why it groweth only upon certain trees, and not upon many whereon these birds do light. For as exotic observers deliver, it groweth upon almond trees, chesnut, apples, oaks, and pine trees. As we observe in England, very commonly upon apple, crabs, and whitethorn; sometimes upon sallow, hazel, and oak: rarely upon ash, limetree, and maple; never, that I could observe, upon holly, elm, and many more.[8] Why groweth it not in all countries and places where these birds are found? for so Brassavolus affirmeth, it is not to be found in the territory of Ferrara, and he was fain to supply himself from other parts of Italy. Why, if it ariseth from a seed, if sown will it not grow again, as Pliny affirmeth, and as by setting the berries thereof, we have in vain attempted it production? Why, if it cometh from seed that falleth upon the tree, groweth it often downwards, and puts forth under the bough, where seed can neither fall nor yet remain?[9] Hereof, beside some

[8] *rarely, &c.*] Ed. 1646 reads, "never upon bays, holly, ashes, elms, and many others."

[9] *under the bough, &c.*] This one objection is soe vigorous and clever, as cuts off the *foolish assertion for ever.—Wr.*

Yet is this apparently triumphant objection demolished, by the result of experiment, as will appear on reading the following very interesting passage, from the work of my old friend and fellow-citizen, Professor Lindley:—"The seed of the miseltoe will germinate in any direction, either upwards, downwards, or laterally. The first movement made by this plant consists in an extension of its cauliculus, which derives its support from the cotyledons, and which terminates at the radicular end, in a small green tubercle of a paler colour than the radicle itself. When the seed is fixed upon a branch by its natural glue, this incipient movement is effected at right angles with the branch; the young shoot is then curved backwards, and the radicular extremity descends to the surface of the branch, to which it adheres by expanding into a kind of disk. From this expansion the roots are emitted, and penetrate the interior of the branch whereon the seed of the miseltoe is fixed: its stem takes the direction above mentioned with reference to the centre of the branch on which it is fixed, and not with reference to the earth; so that with regard to the latter, it is sometimes ascend-

others, the Lord Verulam hath taken notice. And they surely speak probably who make it an arboreous excrescence,[9] or rather super-plant, bred of a viscous and superfluous sap, which the tree itself cannot assimilate; and therefore sprouteth not forth in boughs and surcles of the same shape, and similary unto the tree that beareth it, but in a different form, and secondary unto its specifical intention, wherein once failing, another form succeedeth, and in the first place that of miseltoe, in plants and trees disposed to its production. And therefore also, wherever it groweth, it is of constant shape, and maintains a regular figure; like other supercrescences, and such as living upon the stock of others are termed parasitical plants, as polypody, moss, the smaller capillaries, and many more. So that several regions produce several miseltoes: India one, America another, according to the law and rule of their degenerations.

Now what begot this conceit, might be the enlargement of

ing, sometimes descending, sometimes horizontal. The same phenomena occur if the germination takes place upon dead wood or inorganic substances: a number of seeds were glued to the surface of a cannon ball; all the radicles were directed towards the centre of the ball. Hence it is obvious that the tendency of the miseltoe is not towards the surface of its nutrition, but it obeys the attraction of the body upon which it grows. The miseltoe, which does not grow on the earth, obeys the attraction of any other body; while those plants which naturally grow in the earth obey no other attraction than that of the earth. Parasitical fungi, those which constitute mouldiness; aquatics, which originate on stones, all grow perpendicular to the body that produces them, and will therefore be placed in all kinds of positions with respect to the earth."

On the probable effect produced on the seeds by their passing through the stomachs of birds, Mr. Jesse has some observations in the second series of his *Gleanings*, p. 133. He had seen the young miseltoe cracking the bark of the hawthorn and sprouting out on the *under side* of the branch: as Sir Thomas observes. He asserts the miseltoe to abound in Herefordshire and Monmouthshire, where the miselthrush also abounds: while in Wiltshire and Devonshire both are less common. "Various attempts," he adds, "have been made by persons, with whom I am acquainted, to propagate the miseltoe, by depositing the seed between the forks of trees, and by inserting it in the bark, but the attempt has hitherto failed, as far as I can speak from my own observation. The seeds also of the ivy seldom grow, though planted with the greatest care, even under walls; yet if dropped by birds either upon or even in the crevices of walls, they will grow spontaneously and thrive luxuriantly. It is this circumstance which has led a friend of mine to suppose, and with some reason, that the seeds of the miseltoe and ivy must undergo some process, favourable to their germination, in passing through the stomach of birds."

[1] *an arboreous excrescence.*] Arboreous excrescences of the oake are soe many as may raise the greatest wonder. Besides the gall, which is his proper fruite, hee shootes out oakerns i. e. *ut nunc vocamus* (acornes) and oakes apples, and polypodye, and moss; five several sorts of excrescences.—*Wr.*

Is it not a greater wonder that the dean should have mistaken the gall for the fruit of the oak, and called the acorn an excrescence?

some part of truth contained in its story. For certain it is, that some birds do feed upon the berries of this vegetable, and we meet in Aristotle with one kind of thrush called the miselthrush,* or feeder upon miseltoe.[1] But that which hath most promoted it is a received proverb, *turdus sibi malum cacat*, appliable unto such men as are authors of their own misfortune. For, according unto ancient tradition and Pliny's relation, the bird not able to digest the fruit whereon she feedeth, from her inconverted muting ariseth this plant, of the berries whereof bird-lime is made, wherewith she is after entangled. But although proverbs be popular principles, yet is not all true that is proverbial; and in many thereof, there being one thing delivered and another intended, though the verbal expression be false, the proverb is true enough in the verity of its intention.

As for the magical virtues in this plant, and conceived efficacy unto veneficial intentions, it seemeth a pagan relick, derived from the ancient druids, the great admirers of the oak, especially the miseltoe that grew thereon; which, according unto the particular of Pliny, they gathered with great solemnity. For after sacrifice, the priest, in a white garment, ascended the tree, cut down the miseltoe with a golden hook, and received it in a white coat; the virtue whereof was to resist all poisons, and make fruitful any that used it. Virtues not expected from classical practice; and did they fully answer their promise which are so commended, in epileptical intentions, we would abate these qualities. Country practice hath added another, to provoke the after-birth, and in that case the decoction is given unto cows. That the berries are

* ἐξοβόξος.

[1] *feeder upon miseltoe.*] Sir James Smith points out the distinctness of the miseltoe of the ancients, from ours, in the following passage:—"*Loranthus europæus* seems to be the original, or most common miseltoe, ἔξος, of the Greeks, which grows usually on some kind of fir-tree. But our *viscum album* is likewise found in Greece, though rarely, growing on the oak; and this has been preferred from the most remote antiquity. Hence, when the superstitions of the east travelled westward, our Druids adopted a notion of the miseltoe of the oak being more holy or efficacious, in conjurations or medicine, than what any other tree afforded, the *loranthus*, or ordinary miseltoe, not being known here. This superstition actually remains, and a plant of *viscum* gathered from an oak is preferred by those who rely on virtues which, perhaps, never existed in any miseltoe whatever."

poison, as some conceive, we are so far from averring, that we have safely given them inwardly, and can confirm the experiment of Brassavolus, that they have some purgative quality.

4. The rose of Jericho,[2] that flourishes every year just about Christmas-eve, is famous in Christian reports; which, notwithstanding, we have some reason to doubt, and are plainly informed by Bellonius, it is but a monastical imposture, as he hath delivered, in his observations concerning the plants in Jericho. That which promoted the conceit, or perhaps begot its continuance, was a propriety in this plant; for, though it be dry, yet will it, upon imbibition of moisture,[3] dilate its leaves and explicate its flowers contracted and seemingly dried up. And this is to be effected not only in the plant yet growing, but in some manner also in that which is brought exsuccous and dry unto us. Which quality being observed, the subtilty of contrivers did commonly play this shew upon the eve of our Saviour's nativity; when by drying the plant again, it closed the next day, and so presented a double mystery, referring unto the opening and closing of the womb of Mary.[4]

There wanted not a specious confirmation from a text in Ecclesiasticus, *quasi palma exaltata sum in Cades, et quasi plantatio rosæ in Jericho:* "I was exalted like a palm-tree in Engaddi, and as a rose in Jericho." The sound whereof, in common ears, begat an extraordinary opinion of the rose of that denomination. But herein there seemeth a mistake: for, by the rose in the text, is implied the true and proper rose, as first the Greek, and ours accordingly, rendereth it. But that which passeth under this name, and by us is commonly called the rose of Jericho, is properly no rose, but a small thorny shrub or kind of heath, bearing little white flowers, far differing from the rose; whereof Bellonius, a very

[2] *The rose of Jericho.*] See a note on this plant, in vol. iv, p. 141.

[3] *imbibition of moisture.*] From this that is sayd touching imbibition of moysture, puts me in remembrance of a dry withy stake: which being robd of the barke a foote aboue ground, stood dead three years. In the third yeare, being come to rottenes, and the wood growing spungie, suckt up the moysture from the earthe, reviving the barke above, and then the tree, which grew greene againe with a large head, bigger then the plant to which itt was set. Soe there was a perfect greene withy, and yet noe roote, nor string of a roote, in the earthe below.—*Wr.*

[4] *referring unto, &c.*] Note this gross imposture.—*Wr.*

inquisitive herbalist, could not find any in his travels through Jericho. A plant so unlike a rose, it hath been mistaken by some good simplist for *amomum;* which truly understood, is so unlike a rose that, as Dioscorides delivers, the flowers thereof are like the white violet, and its leaves resemble briony.

Suitable unto this relation almost in all points is that of the thorn at Glastonbury,[5] and perhaps the daughter thereof;

[5] *thorn at Glastonbury.*] A variety of the *cratægus oxyacanthæ*, whose usual period of flowering is May, whence its common name, May-blossom. "Gilpin mentions that 'one of its progeny, which grew in the gardens at Bulstrode, had its flower-buds perfectly formed so early as the 21st December.' In the arboretum at the royal gardens, Kew, a similar thorn flowers at the same season. The belief, that certain trees put forth their flowers on Christmas-day, was not confined to the Glastonbury thorn. In the new forest, at Cadenham, near Lyndhurst, an oak used to bud about that period; but the people, for two centuries, believed that it never budded all the year, except on Old Christmas-day. The superstition was destroyed by careful investigation; and the circumstance is thus recorded in the Salisbury newspaper of January 10th, 1786:—'In consequence of a report that has prevailed in this county for upwards of two centuries, and which, by many, has been considered as a matter of faith, that the oak at Cadenham, in the new forest, shoots forth leaves on every Old Christmas-day, and that no leaf is ever to be seen on it either before or after that day, during the winter, a lady, who is now on a visit in this city, and who is attentively curious in every thing relative to art or nature, made a journey to Cadenham, on Monday the 3rd instant, purposely to enquire on the spot, about the production of this famous tree. On her arrival near it, the usual guide was ready to attend her; but, on his being desired to climb the oak, and to search whether there were any leaves then on it, he said it would be to no purpose; but that if she would come on the Wednesday following, (Christmas-day,) she might certainly see thousands. However, he was prevailed upon to ascend, and on the first branch which he gathered appeared several fair new leaves, fresh sprouted from the buds, and nearly an inch and a half in length. It may be imagined that the guide was more amazed at this premature production than the lady, for, so strong was his belief in the truth of the whole tradition, that he would have pledged his life that not a leaf was to have been discovered on any part of the tree before the usual hour.'"

The preceding passage affords a good contrast to the following note, by Dean Wren, on the "Glastonbury thorn."

"—And the oake in the new forest. King James could not bee induced to beleeve the τὸ ὅτι of this, till Bishop Andrewes, in whose diocese the tree grew, caused one of his own chaplaines, a man of known integritye, to give a true information of itt, which he did: for upon the eve of the nativitye, he gathered about a [100] slips, with the leaves newly opened, which he stuck in claye in the bottom of long white boxes, and soe sent them post to the courte, where they deservedly raised not only admiration, but stopt the mouth of infidelitye and contradiction for ever. Of this I was both an eye-witness, and did distribute many of them to the great persons of bothe sexes in court and others, ecclesiastical persons. But in these last troublesome times, a divelish fellow (of Herostratus humour) having hewen itt round at the roote, made his last stroke on his own legg, whereof hee died, together with the old wondrous tree: which now sprowtes up againe, and may renew his oakye age againe, yf some such envious chance doe not hinder or prevent itt: from which the example of the former villane may perchance deterr the attempte. This I thought to testifie to all future times, and therefore subscribe with the same hand through which those little oakye slips past." *Ita testor Chr. Wren, Dno Lanceloto à sacris domesticis* αὐτόπτης *tunc: et Carolo Regi patrono opt. max°.* [*postea*] *ex* αὐτοψίᾳ *fidus assertor.*

herein our endeavours as yet have not attained satisfaction, and cannot therefore enlarge. Thus much in general we may observe, that strange effects are naturally taken for miracles by weaker heads, and artificially improved to that apprehension by wiser. Certainly many precocious trees, and such as spring in the winter, may be found in most parts of Europe, and divers also in England.* For most trees do begin to sprout in the fall of the leaf or autumn, and if not kept back by cold and outward causes, would leaf about the solstice. Now if it happen that any be so strongly constituted, as to make this good against the power of winter, they may produce their leaves or blossoms in that season; and perform that in some singles, which is observable in whole kinds; as in ivy, which blossoms and bears at least twice a year, and once in the winter; as also in furze, which flowereth in that season.

5. That *ferrum equinum*, or *sferra cavallo*, hath a virtue attractive of iron,[6] a power to break locks and draw off the shoes of a horse that passeth over it: whether you take it for one kind of *securidaca*, or will also take in *lunaria*, we know it to be false, and cannot but wonder at Matthiolus, who upon a parallel in Pliny was staggered into suspension. Who notwithstanding in the imputed virtue to open things close and shut up, could laugh himself at that promise from the herb *Æthiopis* or *Æthiopian* mullein, and condemn the judgment of Scipio, who having such a pick-lock, would spend so many years in battering the gates of Carthage; which strange and magical conceit seems to have no deeper root in reason than the figure of its seed; for therein indeed it somewhat resembles a horse-shoe: which, notwithstanding, Baptista Porta hath thought too low a signification, and raised the same unto a lunary representation.

6. That bays will protect from the mischief of lightning and thunder, is a quality ascribed thereto, common with the fig-tree, eagle, and skin of a seal. Against so famous a quality, Vicomercatus produceth experiment of a bay-tree blasted

* Such a thorn there is in Parham park, in Suffolk, and elsewhere.

[6] *That* ferrum equinum, *&c.*] Some species of *Hippocrepis*?

in Italy. And therefore, although Tiberius for this intent did wear a laurel upon his temples, yet did Augustus take a more probable course, who fled under arches and hollow vaults for protection. And though Porta conceive, because in a streperous eruption it riseth against fire, it doth therefore resist lightning, yet is that no emboldening illation. And if we consider the threefold effect of Jupiter's trisulk, to burn, discuss,[7] and terebrate; and if that be true which is commonly delivered, that it will melt the blade, yet pass the scabbard,—kill the child, yet spare the mother,—dry up the wine, yet leave the hogshead entire,[8]—though it favour the

[7] *discuss.*] Dissipate.—*Wr.*

[8] *That it will melt, &c.*] This passage is strikingly illustrated by a very extraordinary case of lightning, related in the *London and Edinburgh Philosophical Magazine*, for Sept. 1832. Mr. and Mrs. Boddington, while seated in the barouche seat of their carriage, were struck senseless by a flash of lightning, which at the same time killed one of the horses, threw the post-boy to a considerable distance, and then entered the earth, making four large holes. The passage of the electric fluid is thus described:—"It struck Mrs. B's. cotton umbrella, which was literally shivered to pieces, both the springs in the handle forced out, the wires that extended the whalebone broken, and the cotton covering rent into a thousand shreds. From the wires of the umbrella the fluid passed to the wire that was attached to the edge of her bonnet, the cotton-thread that was twisted round that wire, marking the place of entrance over the left eye, by its being burnt off from that spot all round the right side, crossing the back of the head and down into the neck above the left shoulder: the hair that came in contact with it was singed: it here made a hole through the handkerchief that was round her throat, and zigzagged along the skin of her neck to the steel busk of her stays, leaving a painful, but not deep, wound, and also affecting the hearing of the left ear. It entered the external surface of the busk:—this is clearly proved by the brown paper case in which it was enclosed, being perforated on the outside, and the busk itself fused for about a quarter of an inch on the upper surface, presenting a blistered appearance. Its passage down the busk could not be traced in any way; there was no mark whatever on the steel, nor was the paper that covered it discoloured or altered in the slightest degree: its exit at the bottom, however, was as clearly indicated as its entrance at the top: the steel was fused in the same manner, and the paper was perforated in the same way, but on the opposite side.

"There were marks of burning on the gown and petticoat above the steel; and the inside of the stays, and the garments under the stays, were pierced by the passage of the fluid to her thighs, where it made wounds on both; but that on the left so deep, and so near the femoral artery, that the astonishment is, that she escaped with life;—even as it was, the hæmorrhage was very great. Every article on which she sat was perforated to the cushion of the seat, the cloth of which was torn in a much more extensive way than the clothes; and the leather that covered the iron forced off in the same spot, clearly marking its egress at this place. In the case of Mr. B. the umbrella also was the conductor; it was made of silk, and was but little damaged; a small portion of the upper part only being torn where it joins the stick, and none of the springs or wires being displaced. The main force of the shock, however, appears to have passed down the handle to the left arm, though a portion of it made a hole through the brim of his hat, and burnt off all the hair that was below it, together with the eye-brows and eye-lashes. The electric stream shattered the left hand, fused the gold shirt buttons, and tore the clothes in a most extraordinary manner, forcing parts of them, together with the buttons, to a considerable distance, and a deep wound was inflicted under its position on the

amulet, it may not spare us; it will be unsure to rely on any preservative, it is no security to be dipped in Styx, or clad in the armour of Ceneus. Now that beer, wine, and other liquors, are spoiled with lightning and thunder, we conceive it proceeds not only from noise and concussion of the air, but also noxious spirits which mingle therewith, and draw them to corruption; whereby they become not only dead themselves, but sometimes deadly unto others, as that which Seneca mentioneth; whereof whosoever drank, either lost his life, or else his wits upon it.

7. It hath much deceived the hopes of good fellows, what is commonly expected of bitter almonds; and though in Plutarch confirmed from the practice of Claudius his physician, that antidote against ebriety hath commonly failed. Surely men much versed in the practice do err in the theory of inebriation; conceiving in that disturbance the brain doth only suffer from exhalations and vapourous ascensions from the stomach, which fat and oily substances may suppress; whereas the prevalent intoxication is from the spirits of drink dispersed into the veins and arteries; from whence by common conveyances they creep into the brain, insinuate into its ventricles, and beget those vertigoes accompanying that perversion. And therefore the same effect may be produced by a glister; the head may be intoxicated by a medicine at the heel. So the poisonous bites of serpents, although on parts at distance from the head, yet having entered the veins, disturb the animal faculties, and produce the effects of drink, or poison swallowed. And so, as the head may be disturbed by

wrist. The arm was laid bare to the elbow, which is presumed to have been at the moment very near his left waistcoat-pocket, in which there was a knife; this also was forced from its situation, and forced on the ground; a severe wound was made on his body, and every article of dress torn away as if it had been done by gunpowder. From the knife it passed to the iron of the seat, wounding his back, and setting fire to his clothes in its passage. Another portion descended to the right arm, which had hold of the lower part of the stick of the umbrella; was attracted by the sleeve-button, where it made a wound, but slight, compared to that on the left, passed down the arm (which it merely discoloured, and broke the skin of in two small places) to a gold pencil case in the right waistcoat pocket. The great coat he had on was torn to pieces, and the coat immediately above the waistcoat pocket much rent; but the waistcoat itself was merely perforated; on the external part, where the discharge entered by a hole about the size of a pea, and on the inside by a similar hole at the other extremity of the pencil case, where it passed out, setting fire to his trowsers and drawers, and inflicting a deep wound round his back, the whole of which was literally flayed."

the skin,[9] it may the same way be relieved; as is observable in balneations, washings, and fomentations, either of the whole body, or of that part alone.[1]

CHAPTER VII.[2]

Of some insects, and the properties of several plants:—of the death-watch; the presages drawn from oak-apple insects; whether all plants have seeds; whether the sap of trees runs to the ground in winter; of the effects of camphor; with many others.

1.[3] FEW ears have escaped the noise of the death-watch, that is, the little clickling sound heard often in many rooms, somewhat resembling that of a watch; and this is conceived to be of an evil omen or prediction of some person's death: wherein notwithstanding there is nothing of rational presage or just cause of terror unto melancholy and meticulous heads. For this noise is made by a little sheathwinged grey insect,[4] found often in wainscot benches and wood-work in the summer. We have taken many thereof, and kept them in thin boxes, wherein I have heard and seen them work and knock with a little proboscis or trunk against the side of the box, like a *picus martius*, or woodpecker against a tree. It worketh best in warm weather, and for the most part giveth not over under nine or eleven strokes at a time. He that could extinguish the terrifying apprehensions hereof, might prevent the passions of the heart, and many cold sweats in grandmothers

[9] *by the skin.*] Affections of the skin. —*Wr.*

[1] *that part alone.*] The most present way of bringing the drunken to the use of his senses, is to apply large sponges dipt in strong white wine vinegar, which a Doctor of Physic, of prime note and name, does assure mee is, upon manifold experience, found most true; yf they be for a while applied not to the head, but to the testicles.—*Wr.*

[2] *Chap.* VII.] A considerable portion of the contents of this chapter was added in the 2nd, 3rd, and 6th editions: the rest formed the conclusion of chap. VI, in the 1st edition, and was first made a separate chapter in the 2nd edition.

[3] *No.* 1.] Added in the 6th edition, as also the 7th paragraph: the intervening five, and the four succeeding ones, appeared first in the 2nd edition.

[4] *sheathwinged, &c.*] *Anobium tessellatum.*

and nurses, who, in the sickness of children, are so startled with these noises.

2. The presage of the year succeeding, which is commonly made from insects or little animals in oak-apples, according to the kinds thereof, either maggot, fly or spider; that is, of famine, war, or pestilence; whether we mean that woody excrescence, which shooteth from the branch about May, or that round and apple-like accretion which groweth under the leaf about the latter end of summer, is, I doubt, too distinct, nor verifiable from event.

For flies and maggots are found every year, very seldom spiders: and Helmont affirmeth, he could never find the spider and the fly upon the same trees, that is the signs of war and pestilence, which often go together: beside, that the flies found were at first maggots, experience hath informed us; for keeping these excrescences, we have observed their conversions, beholding in magnifying glasses the daily progression thereof. As may be also observed in other vegetable excretions, whose maggots do terminate in flies of constant shapes; as in the nut-galls of the outlandish oak, and the mossy tuft of the wild briar; which having gathered in November, we have found the little maggots, which lodged in wooden cells all winter, to turn into flies in June.[5]

We confess the opinion may hold some verity in the analogy, or emblematical fancy. For pestilence is properly signified by the spider, whereof some kinds are of a very venomous nature; famine by maggots, which destroy the fruits of the earth; and war not improperly by the fly, if we rest in the fancy of Homer, who compares the valiant Grecian unto a fly.

Some verity it may also have in itself, as truly declaring the corruptive constitution in the present sap and nutrimental juice of the tree; and may consequently discover the disposition of that year, according to the plenty or kinds of these productions. For if the petrifying juices of bodies bring forth plenty of flies and maggots, they give forth testimony of common corruption, and declare that the elements are full of the seeds of putrefaction, as the great number of caterpil-

[5] *flies in June.*] Of the genus *Cynips.*

lars, gnats, and ordinary insects do also declare. If they run into spiders, they give signs of higher putrefaction, as plenty of vipers and scorpions are confessed to do; the putrefying materials producing animals of higher mischiefs, according to the advance and higher strain of corruption.[6]

3. Whether all plants have seed, were more easily determinable, if we could conclude concerning hartstongue,[7] fern, the capillaries, *lunaria*,[7] and some others. But whether those little dusty particles, upon the lower side of the leaves, be seeds and seminal parts; or rather, as it is commonly conceived, excremental separations; we have not as yet been able to determine by any germination or univocal production from them when they have been sowed on purpose; but having set the roots of hartstongue in a garden, a year or two after, there came up three or four of the same plants, about two yards distance from the first. Thus much we observe, that they seem to renew yearly, and come not fully out till the plant be in its vigour; and, by the help of magnifying glasses, we find these dusty atoms to be round at first, and fully representing seeds, out of which at last proceed little mites almost invisible; so that such as are old stand open, as being emptied of some bodies formerly included; which, though discernable in hartstongue, is more notoriously discoverable in some differences of brake or fern.

But exquisite microscopes and magnifying glasses have at last cleared this doubt, whereby also long ago the noble Fredericus Cæsius beheld the dusts of polypody as big as pepper corns; and as Johannes Faber testifieth, made draughts on paper of such kind of seeds, as big as his glasses represented them: and set down such plants under the classes of *herbæ tergifœtæ*, as may be observed in his notable botanical tables.[8]

4. Whether the sap of trees runs down to the roots in winter, whereby they become naked and grow not; or whe-

[6] *For if the putrefying, &c.*] See note at page 362.

[7] *hartstongue*, lunaria.] *Scolopendrium* and moonwort.

[8] 3. *Whether all plants have seeds, &c.*] This doubt has been cleared up by the laborious investigations of subsequent botanists. Sir James Smith, in speaking of the *dorsal ferns*, remarks—"The production of perfect germinating seeds, contained in capsules, and consequently produced by impregnated *fertile flowers*, is as clear in ferns as in mosses."

ther they do not cease to draw any more, and reserve so much as sufficeth for conservation, is not a point indubitable.[9] For we observe, that most trees, as though they would be perpetually green, do bud at the fall of the leaf, although they sprout not much forward until the spring, and warmer weather approacheth; and many trees maintain their leaves all winter, although they seem to receive very small advantage in their growth. But [that] the sap doth powerfully rise in the spring, to repair that moisture whereby they barely subsisted in the winter, and also to put the plant in a capacity of fructification,—he that hath beheld how many gallons of water may in a small time be drawn from a birch tree in the spring, hath slender reason to doubt.

5. That camphor eunuchates, or begets in men an impotency unto venery, observation will hardly confirm; and we have found it to fail in cocks and hens, though given for many days; which was a more favourable trial than that of Scaliger, when he gave it unto a bitch that was proud. For the instant turgescence is not to be taken off, but by medicines of higher natures; and with any certainty but one way that we know, which notwithstanding, by suppressing that natural evacuation, may incline unto madness, if taken in the summer.

6. In the history of prodigies we meet with many showers of wheat; how true or probable, we have not room to debate: only thus much we shall not omit to inform; that what was this year found in many places, and almost preached for wheat rained from the clouds, was but the seed of ivy-berries, which somewhat represent it; and though it were found in steeples and high places, might be conveyed thither, or muted out by birds; for many feed thereon, and in the crops of some we have found no less than three ounces.

7. That every plant might receive a name according unto

[9] 4. *Whether the sap, &c.*] Du Petit Thouars supposes that the sap begins to move at the extremities of the branches before it stirs at the roots,—and this has been confirmed by experience. He theorises that the first budding in spring absorbs the sap from adjacent parts—which draw on those parts still further removed, and so on, till the whole mass of fluid is set in motion down to the roots. Dutrochet has formed a theory to account for the motion of vegetable fluids, by supposing galvanic action. See a curious account of his experiments and deductions, in *Lindley's Introd. to Botany*, p. 237, 238.

the disease it cureth, was the wish of Paracelsus, a way more likely to multiply empiricks than herbalists: yet what is practised by many is advantageous unto neither; that is, relinquishing their proper appellations to re-baptize them by the name of saints, apostles, patriarchs, and martyrs, to call this the herb of John, that of Peter, this of James or Joseph, that of Mary or Barbara. For hereby apprehensions are made additional unto their proper natures; whereon superstitious practices ensue, and stories are framed accordingly, to make good their foundations.

8. We cannot omit to declare the gross mistake of many in the nominal apprehension of plants. To instance but in few. An herb, there is, commonly called *betonica*[1] *Pauli*, or *Paul's betony;* hereof the people have some conceit in reference to St. Paul; whereas, indeed, that name is derived from Paulus Ægineta, an ancient physician of Ægina, and is no more than speedwell, or fluellin. The like expectations are raised from *herba trinitatis;* which, notwithstanding, obtaineth that name from the figure of its leaves, and is one kind of liverwort, or *hepatica.* In *milium solis*, the epithet of the sun hath enlarged its opinion; which hath, indeed, no reference thereunto, it being no more than *lithospermon*, or *grummel*, or rather *milium soler;* which as Serapion from Aben Juliel hath taught us, because it grew plentifully in the mountains of Soler, received that appellation. In Jew's ears something is conceived extraordinary from the name, which is in propriety but *fungus sambucinus*, or an excrescence about the roots of elder, and concerneth not the nation of the Jews, but Judas Iscariot, upon a conceit he hanged on this tree; and is become a famous medicine in quinsies,[2] sore throats,[3] and strangulations,[4] ever since. And so are they deceived in the name of horse-radish, horse-mint, bull-rush, and many more: conceiving therein some prenominal consideration, whereas, indeed, that expression is but a Grecism, by the prefix of *hippos* and *bous;* that is, horse and bull, intending no more

[1] *betonica.*] *Pauli Æginetæ betonica; nobis est* Flewellin.—*Wr.*

[2] *quinsies.*] *Lege* quinancyes.—*Wr.*

[3] *sore throats.*] A correspondent of the *Gentleman's Magazine*, vol. lxxix, p. 38, relates a cure of sore throat by the use of sliced horseradish—chewed, and then passed to the root of the tongue.

[4] *strangulations.*] *Supple* [inward.]—*Wr.* i. e. *lege* 'inward strangulations.'

than great.[5] According whereto the great dock is called *hippolapathum;* and he that calls the horse of Alexander Great-head,[6] expresseth the same which the Greeks do in *Bucephalus.*

9. Lastly, many things are delivered and believed of other plants, wherein at least we cannot but suspend. That there is a property in basil to propagate scorpions, and that by the smell thereof they are bred in the brains of men, is much advanced by Hollerius, who found this insect in the brains of a man that delighted much in that smell. Wherein beside that we find no way to conjoin the effect unto the cause assigned; herein the moderns speak but timorously, and some of the ancients quite contrarily. For according unto Oribasius, physician unto Julian, the Africans, men best experienced in poisons, affirm, whosoever hath eaten basil, although he be stung with a scorpion, shall feel no pain thereby: which is a very different effect, and rather antidotally destroying, than seminally promoting its production.

That the leaves of *cataputia* or spurge, being plucked upward or downward, respectively perform their operations by purge or vomit, as some have written, and old wives still do preach, is a strange conceit, ascribing unto plants positional operations, and after the manner of the loadstone; upon the pole[7] whereof, if a knife be drawn from the handle unto the point, it will take up a needle; but if drawn again from the point to the handle, it will attract it no more.

That cucumbers are no commendable fruits; that being very waterish, they fill the veins with crude and windy serosi-

[5] *great.*] As is manifest in *Hipposelinum,* but especially in *hippoäctos,* the great eagle. *Hippelaphus, hippomærathon,* Ἱππόγυπποι, Ἱππομόμηκες, &c.—*Wr.*

To this list may be added horse-ant, bullhead, bullfinch, &c. But the prefix does not always mean "great." Evelyn says, that the horse-chestnut is so called because it cures horses and other cattle of coughs. And certainly both horse-chestnut and horse-radish are among the medicines used in farriery. Horse-beans, which are smaller than some other species, are so called because horses are fed with them;—horse-leeches, probably because they fasten on the legs of horses while drinking. Horse-hoe, though drawn by horses because it is *large,* owes its prefix to the former, not to the latter circumstance. Why is the epithet, *dog,* prefixed to the scentless violet and the wild rose?

[6] *Great-head.*] Or, as I knew a gallant horse, whom his lord called Club. —*Wr.*

[7] *pole.*] Upon an armed stone there are two poles, one northe and the other southe. Now as the back of the knife layd on both these, being drawn from the southe to the northe, imprints the magneticall vertue, soe drawne back againe takes itt off.—*Wr.*

ties; that containing little salt or spirit, they may also debilitate the vital acidity, and fermental faculty of the stomach, we readily concede; but that they should be so cold, as be almost poison by that quality, it will be hard to allow, without the contradiction of Galen; * who accounteth them cold but in the second degree, and in that *classis* have most physicians placed them.[8]

That elder-berries are poison, as we are taught by tradition, experience will unteach us. And besides the promises of Blochwitius, the healthful effects thereof will convict us.

That an ivy cup will separate wine from water, if filled with both, the wine soaking through, but the water still remaining, as after Pliny many have averred, we know not how to affirm; who making trial thereof, found both the liquors to soak indistinctly through the bowl.[9]

That sheep do often get the rot, by feeding in boggy grounds where *ros-solis*[1] groweth, seems beyond dispute. That this herb is the cause thereof, shepherds affirm and deny; whether it hath a cordial virtue by sudden refection, sensible experiment doth hardly confirm, but that it may have a balsamical and resumptive virtue, whereby it becomes a good medicine in catarrhs and consumptive dispositions, practice and reason conclude. That the lentous drops upon it are not extraneous, and rather an exudation from itself, than a rorid concretion from without; beside other grounds, we have reason to conceive: for having kept the roots moist and earthed in close chambers, they have, though in lesser plenty, sent out these drops as before.[2]

* In his *Anatomia Sambuci.*

[8] *That cucumbers, &c.*] Added in the 2nd edition.

[9] *to soak indistinctly, &c.*] The faylng might bee by the weakenes of our racked wines.—*Wr.*

"Fixed or essential oils, or naphtha, and similar bodies, in mixture with water or aqueous solutions, in which they are not soluble, may be separated from the latter by a paper filter, previously moistened with pure water." *Faraday's Chemical Manipulation*, p. 241, No. 514.

[1] *ros solis.*] This plant, (*drosera rotundifolia* and *longifolia*, the round and long leaved sundew, and the butterwort, and white rot, *pinguicula vulgaris*, and *hydrocotyle*,) have been accused as the cause of dry rot; but they do not occur in every rotting soil. Various other causes have been assigned. But nothing seems so uniformly to occasion the disease as certain *paludal effluvia*, from whatever circumstances of locality of soil, or vegetation, such effluvia may be occasioned.

[2] *That sheep, &c.*] Added in the 3rd edition.

That *flos Africanus* is poison, and destroyeth dogs, in two experiments we have not found.[3]

That yew, and the berries[4] thereof, are harmless, we know.

That a snake will not endure the shade of an ash, we can deny.[5] Nor is it inconsiderable what is affirmed by Belloni-us:* for if his assertion be true, our apprehension is oftentimes wide in ordinary simples, and in common use we mistake one for another. We know not the true thyme; the savory in our gardens is not that commended of old; and that kind of hyssop the ancients used, is unknown unto us, who make great use of another.

We omit to recite the many virtues and endless faculties ascribed unto plants, which sometime occur in grave and serious authors; and we shall make a bad transaction for truth to concede a verity in half. To reckon up all, it were employment for Archimedes, who undertook to write the number of the sands. Swarms of others there are, some whereof our future endeavours may discover: common reason, I hope, will save us a labour in many, whose absurdities stand naked unto every eye; errors, not able to de-

* Lib. 1, *Observat.*

[3] *not found.*] There are diverse sorts of them. Some, by longe translations into our colder clymes, now grown harmlesse: as it happened in peaches, which in their original soyle were counted pernicious in an extreme degree of cold and moyst; but by transplantation and long mangonization among us, prove to bee beneficial to hot complexions: and with Spanish wine not much hurtful to any in a small quantitye.—*Wr.*

[4] *That yew, &c.*] I have often seen children eate them without hurt; but in hot countries the ixia grows to such a hight of clammines, as cannot bee dissolved in the stomack.—*Wr.*

"Nihil æque facere ad viperæ morsum, quam taxi arboris succum.—*Sueton. Claud.* § 16.

"Cativulcus—taxo—se exanimavit."—*Cæsar. de Bell. Gall.* l. v, 31.

See an instance of two cows being killed by eating the leaves of yew, at High Lorton, Cumberland, in 1817. *Hampshire Chronicle*, Jan. 26, 1807.—"Three cows died a few days ago, at Drayton, in consequence of eating yew leaves." *Evening Mail*, May 3rd, 1811.—"Two horses killed by eating yew in a close near Chelmsford; a great quantity being found in the stomachs of the dead animals. A filly was saved by powerful antidotes being quickly administered.—*Phil. Gazette*, Feb. 12, 1823.—*Jef.*

[5] *deny.*] Edit. 1646 and 1650 add here the following sentence:—"That cats have such delight in the herb *nepeta*, called therefore *cattaria*, our experience cannot discover."—I have met with the probable reason for the suppression of this passage (3rd edit. 1658, and subsequent editions) in a letter from Dr. How to the author, dated 1655. "I have numbered, about two rootes of *nep.* in my garden, 16 cats, who never destroyed those plants, but have totally despoyled the neighbouring births in that bed to a yard's distance, rendring the place hard and smooth, like a walke with their frequent treddings."

ceive the emblem of justice, and needing no Argus to descry them. Herein there surely wants expurgatory animadversions, whereby we might strike out great numbers of hidden qualities; and having once a serious and conceded list, we might, with more encouragement and safety, attempt their reasons.

THE THIRD BOOK:

THE PARTICULAR PART CONTINUED.

OF POPULAR AND RECEIVED TENETS CONCERNING ANIMALS.

CHAPTER I.

That an Elephant hath no joints, &c.

THE first shall be of the elephant, whereof there generally passeth an opinion it hath no joints:[6] and this absurdity is seconded with another, that, being unable to lie down, it sleepeth against a tree; which the hunters observing, do saw

[6] *The first shall be of the elephant, &c.*] The "popular and received tenet" concerning this animal, which it is the main object of the chapter before us to refute, appears either to have been first delivered, or first recorded from tradition, by Ctesias the Cnidian, who is the earliest writer to whom I have been able to trace it; and who, according to Professor Schlegel, was the first among the Greeks who gave, from his own personal observation, a description of the elephant in any way copious, which was written about 380 A. C. The probability that Ctesias was the originator, or the first recorder, of this vulgar error, is confirmed by the circumstance that many idle tales, regarding other animals, appear to have been also first promulgated by him; and also by the fact, that Aristotle, in his details on the elephant, twice refutes the assertions of Ctesias, naming him; and when refuting this particular error, does so in such a manner, that although no name is given, his allusions, as Professor Schlegel has shown, can refer only to that writer. The absurdity respecting the elephant's posture in sleep and the consequent mode of capturing him, is also derived from Ctesias.

It is very true, therefore, that the "conceit" in question "is not the daughter of later times, but an old and grey-headed error;" and it is also true that it is delivered as such by Aristotle. I have found it necessary, for reasons that will be evident in the course of these annotations, always to compare what our author has attributed to that philosopher, with the original statements made in his works; and as there are several curious points in the history of our knowledge respecting the elephant connected with the subject, and which contribute to elucidate Browne's remarks, I shall here introduce Aristotle's observations.

It will be proper to premise, however, that it has been shown by Professor Schlegel, in his learned and interesting *History of the Elephant and Sphinx*, (*Class. Journ.* vol. xxxi,) that the first battle between any of the nations of the western world and those of the eastern, in which elephants were used, was that

it almost asunder; whereon the beast relying, by the fall of the tree falls also down itself, and is able to rise no more. Which conceit is not the daughter of later times, but an old and grey-headed error, even in the days of Aristotle, as he delivereth in his book, *De Incessu Animalium*, and stands successively related by several other authors; by Diodorus

of Arbela, and that some of these, taken by Alexander, and sent by him into Greece, were the first elephants seen in that country, and very probably the actual subjects of the admirable natural history of this animal contained in the works of Aristotle, which is manifestly, and indeed professedly, the result of frequent and minute actual examination of elephants of both sexes. And, "what he himself could not ascertain," as Professor Schlegel remarks, "viz. the beast's mode of life in his wild state, he doubtless ascertained from the Indian conductors who led the elephants." (Ib. p. 53.)

Aristotle, in the ninth chapter of his book, *On the Progressive Motion of Animals*, when shewing that without inflexion there could be no progression, to which demonstration Browne's argument on the subject is greatly indebted, (as he indeed indirectly acknowledges,) has occasion to notice some partial exceptions to this rule, which he introduces thus: "It is possible, however, for the leg to be moved when not inflected, in the same manner as infants creep. And there is an ancient report of this kind about elephants, which is not true; for such animals as these are moved in consequence of an inflexion taking place either in their shoulders or hips. No animal, however, is capable of moving with a continued progressive motion, and with security, with its members straight; but it may be moved as they are in the *palæstræ*, who proceed on their knees through the dust." —*T. Taylor's Treatises of Aristotle on the Parts and Progressive Motion of Animals*, p. 181.

In the second book of his *History of Animals*, chap. i, when treating of the accordance of viviparous animals in general with each other, and with man, in configuration and in motions, the Stagyrite observes:— "The legs, however, of other animals, as well the fore as the hind legs, have flexions contrary to each other, and to the flexions of the legs and arms of man, the elephant being excepted.....What is asserted of the elephant, however, by some, is not true; (i. e. that he cannot bend his legs, nor sit;) for he can do both, except that he cannot, on account of his weight, at one and the same time, bend each fore leg, and recline on each side, but he can alone bend one leg, either the right or the left, and alone recline on one side, and in this manner he sleeps, (leaning against some wall or tree.) But he bends his hind legs in the same manner as men."—*Taylor's Translation of Aristotle's History of Animals*, p. 36.

In the latter passage, however, Aristotle, though he corrects the error of Ctesias in a satisfactory manner, appears, on another point, to be mistaken himself. For it would seem to imply that the elephant, having bent one fore-leg, cannot then bend the other so as to kneel with both—which is contrary to the fact. And, what is perhaps still more curious in the history of the subject, Mr. Taylor, in his concluding interpolation, has actually adopted a portion of the original error of Ctesias, to complete the sense of his author. Something, certainly, appears to be wanting, in order to complete the sense. But, that a statement by a writer who is never mentioned by Aristotle except for the purpose of refuting him, and which is in itself so well known to be untrue, should have been employed for the purpose, is very extraordinary. As the amplifications of Mr. Taylor's version of this passage also tend in some degree to obscure the sense, I will add the closer and more concise version of Du Val.—"Flectunt autem crura, priora contrà, atque posteriora: et e contrario, quàm homo, membra inflectunt, excepto elephanto.....Elephas non, ut aliqui retulerunt, agit: sed considendo crura inflectit, nequit tamen præ nimio ponder eutrumque in latus equilibrio quodam vergere: sed aut lævo incubat, aut dextro, atque eo ipso habitu requiescit. —*Arist. Opera Omnia, curâ Du Val*, tom. i, p. 778, B.—*Br.*

Siculus, Strabo, Ambrose, Cassiodore, Solinus, and many more. Now, herein, methinks, men much forget themselves, not well considering the absurdity of such assertions.

For first, they affirm it hath no joints, and yet concede it walks and moves about;[7] whereby they conceive there may be a progression or advancement made in motion, without inflexion of parts. Now, all progression or animal locomotion being (as Aristotle teacheth) performed *tractu et pulsu*, that is, by drawing on or impelling forward some part which was before in station, or at quiet,—where there are no joints or flexures, neither can there be the actions. And this is true, not only in quadrupeds, volatiles, and fishes, which have distinct and prominent organs of motion,—legs, wings, and fins, but in such also as perform their progression by the trunk,—as serpents, worms, and leeches; whereof, though some want bones, and all, extended articulations, yet have they arthritical analogies,* and, by the motion of fibrous and musculous parts, are able to make progression. Which to conceive in bodies inflexible, and without all protrusion of parts, were to expect a race from Hercules' pillars, or hope to behold the effects of Orpheus' harp, when trees found joints, and danced after his music.

* Joint-like parts.

[7] *For first, they affirm it hath no joints, &c.*] This argument of our author, showing, from reason, anatomy, and general analogy with other animals, the absurdity of the error he is refuting, is exceedingly logical and pertinent.

Ross, with his usual dogmatism, represents that "the doctor, prying too narrowly into the sayings of the ancients, reckoneth them amongst his *Vulgar Errors*, which being rightly understood, are no errors at all; as when they say the elephant hath no joynts, they meant their joynts were stiffe, and not so easily flexible as those of other animals." (*Arcan. Microc.* p. 152.) But unfortunately for this explanation, Ctesias explicitly affirms, "that the elephant hath no joints in the bone of his leg," which fully justifies the importance given by Browne to the popular misrepresentation founded on the statement of that writer.

Robinson, by implication, condemns Browne for censuring the views of the ancients on this subject; observing, "*that elephants have no joynts*, though by some it be delivered in generall termes; yet was not their *Minerva* so dull, to except all; but did intend the *suffragineous* or *knee joynts* onely: without which there may be a progression in man; as upon stilts; by the sole motion of the hippe: in *quadrupedes*, as in full gallop." But though he proceeds to quote Cæsar as affirming such to be the case with the elk (*alces,*) he adduces no facts whatever in contravention of Browne's representations and arguments; although, on the other hand, he has some good instances of animals to which station is rest, as many birds, and ordinarily horses also. Thus this commentator, in his defence of the ancients against our author, actually admits that they made the very statement which we have just seen to be that of Ctesias, the original promulgator of the story.—*Br.*

Again, while men conceive they never lie down,[8] and enjoy not the position of rest ordained unto all pedestrious animals, hereby they imagine, (what reason cannot conceive,) that an animal of the vastest dimension and longest duration, should live in a continual motion, without that alternity and vicissitude of rest whereby all others continue; and yet must thus much come to pass, if we opinion they lie not down and enjoy no decumbence at all. For station is properly no rest, but one kind of motion, relating unto that which physicians (from Galen) do name extensive or tonical; that is, an extension of the muscles and organs of motion, maintaining the body at length, or in its proper figure.

Wherein although it seem to be unmoved, it is not without all motion; for in this position the muscles are sensibly extended, and labour to support the body; which, permitted unto its proper gravity, would suddenly subside and fall unto the earth; as it happeneth in sleep, diseases, and death.

[8] *Again, while men conceive they never lie down, &c.*] The argument contained in this and the following paragraph, is deserving of the same praise as has been awarded to the preceding direct argument on the necessity of the elephant having joints; that necessity being now shown, in an indirect manner, from the general necessity of change and alternation of posture in animals. But our author, from the deficiency of his knowledge both of the natural history and the anatomy of the elephant, happens not to have been aware that *station*, to it, is *rest*, (except when greatly fatigued, or in great weakness from disease,) as we have seen, when citing Robinson's animadversions, to be the case also with some other animals. From the construction of all the joints in the legs of this animal, and especially from that of the knee joint, the elephant, when standing still, rests, as it were, upon four pillars, with scarcely any need of muscular exertion, and of none but what slight mental excitement can supply. Thus the elephant, which died some years since in the menagerie of the Jardin des Plantes, at Paris, was observed never to lie down, even in his last illness, until immediately before his death; and that which was so long exhibited at Exeter 'Change, London, and killed there in 1826, received 152 balls in almost every anterior part of his body, before he fell.

The following relation, however, is still more illustrative of the fact, that the elephant *rests* while *standing*; especially when under any excitement. Mr. Corse, (now Mr. Corse Scott,) under whose direction the elephant hunters of Tiperah, in Bengal, were placed for several years, states, that it is always a good sign when an elephant lies down to sleep within a few months after he is taken; as it shows him to be of a good temper, not suspicious, but reconciled to his fate. "Elephants," he observes, "particularly goondahs, (which are large male animals that have strayed from the woods and from the herds) have been known to *stand twelve months* at their pickets *without lying down to sleep*; though they sometimes take a short nap standing." *Obs. on the Manners, Habits, and Nat. Hist. of the Elephant—Phil. Trans.* 1799, p. 44.

From the observation of some remarkable case of this description, in a country where the rarity of the animal precluded the correction of the inference deduced from it, in addition perhaps to the "cylindrical composure of the legs," to which it is attributed by our author, the story of the want of knee-joints in the elephant, in all probability, must have originated.—*Br.*

From which occult action and invisible motion of the muscles, in station, (as Galen declareth,) proceed more offensive lassitudes than from ambulation.[9] And therefore the tyranny of some have tormented men with long and enforced station; and though Ixion and Sisyphus, which always moved, do seem to have the hardest measure, yet was not Tityus favoured, that lay extended upon Caucasus, and Tantalus suffered somewhat more than thirst, that stood perpetually in hell. Thus Mercurialis, in his *Gymnastics*, justly makes standing one kind of exercise: and Galen, when we lie down, commends unto us middle figures, that is, not to lie directly, or at length, but somewhat inflected, that the muscles may be at rest; for such as he termeth *hypobolemaioi*, or figures of excess, either shrinking up or stretching out, are wearisome positions, and such as perturb the quiet of those parts. Now various parts do variously discover these indolent and quiet positions, some in right lines, as the wrists; some at right angles, as the cubit;[1] others at oblique angles, as the fingers and knees: all resting satisfied in postures of moderation, and none enduring the extremity of flexure or extension.[2]

Moreover, men herein do strangely forget the obvious relations of history, affirming they have no joints, whereas they daily read of several actions which are not performable without them. They forget what is delivered by Xiphilinus, and also by Suetonius, in the lives of Nero and Galba, that elephants have been instructed to walk on ropes, in public shews, before the people: which is not easily performed by man, and requireth not only a broad foot, but a pliable flexure of joints, and commandable disposure of all parts of progression. They pass by that memorable place in Curtius, concerning the elephant of King Porus; *Indus qui elephantem regebat, descendere eum ratus, more solito procumbere jussit in genua, cæteri quoque (ita enim instituti erant) demisere corpora in*

[9] *From which, &c.*] N. B. *et cave!* The mischeef which cometh by standing long (as at studyes) appears in old age, by the swelling of the legs, and (oft-times) the gout.—*Wr.*

Would not Darwin have said that this swelling was no other than the appetency of the leg towards an attainment of the columnar formation of the elephantine leg—an appetency excited by the stationary discipline of its studious owner, the dean?

[1] *cubit.*] The fore-arm.

[2] *Now various parts, &c.*] This sentence was first added in the 2nd edit.

terram. They remember not the expression of Osorius,* when he speaks of the elephant presented to Leo X; *Pontificem ter genibus flexis, et demisso corporis habitu venerabundus salutavit.* But above all, they call not to mind that memorable shew of Germanicus, wherein twelve elephants danced unto the sound of music, and after laid them down in the *tricliniums*, or places of festival recumbency.

They forget the etymology of the knee, approved by some grammarians.† They disturb the position of the young ones in the womb; which upon extension of legs is not easily conceivable, and contrary unto the general contrivance of nature. Nor do they consider the impossible exclusion thereof, upon extension and rigour of the legs.[3]

Lastly, they forget or consult not experience,[4] whereof not many years past we have had the advantage in England, by an

* *De rebus gestis Emanuelis.*

† Γόνυ from γωνία.

[3] *They forget, &c.*] This paragraph was first added in the 2nd edit.

[4] *They forget, or consult not experience, &c.*] This will be the proper place to make a remark or two on the modern history and prevalence of this tale, that the legs of the elephant are devoid of joints. In the volume on the elephant, published in the *Menageries* of the *Library of Entertaining Knowledge*, are some quotations on the subject from early English works, for which the compiler of that volume is indebted to Steevens's notes on Shakspeare, though he does not acknowledge it. In a curious specimen of our early natural history, *The Dialogues of Creatures Moralyzed*, is mention, Steevens informs us, of "the *olefawnte* that *bowyth not the kneys.*" In the play of *All Fools*, 1605, occurs this passage: "I hope you are no *elephant*—you have *joints.*" Shakspeare, in his *Troilus and Cresside*, 1609, makes Ulysses say (act ii, sc. 3,) "The elephant hath joints, but none for courtesy: his legs are legs for necessity, not for flexure." In *All's Lost by Lust*, 1633, a woman is said to be "stubborn as an *elephant's leg*—no bending in her." It will not follow from these expressions, that the authors of all the works in which they appear were actually believers in this story; nor could it be proved from them that it was generally believed at the times when they wrote; for, with respect to the three plays, the allusion may be regarded as founded only on the known prevalence, at some period, of the belief in question. Still, even these evince, at least, the former existence of the notion, as well as its extensive prevalence and popular currency. But the mention of it in *The Dialogues of Creatures Moralyzed*, shows it to have been a generally received opinion in this country at the date of their publication, early in the sixteenth century. Browne mentions it as a general opinion, (the first edition of the *Vulgar Errors* being published in 1646, and the last in 1686,) though he states it to be "at present well suppressed" in England by an elephant shown, "not many years past,"..... "in many parts thereof, not only in the posture of standing, but kneeling and lying down." He expresses an apprehension, however, that it will revive again, citing the case of Italy, where, notwithstanding the opportunity of witnessing the habits of the animal, afforded by the elephant sent to Leo X, by Emanuel, King of Portugal, "the error," he observes, "is still alive and epidemical, as with us." And it remains, even to the present day, a "vulgar error" among the uneducated classes. It has long been the custom for the exhibitors of itinerant collections of wild animals, when showing the elephant, to mention the story of its having no joints, and its consequent inability to kneel;

elephant shewn in many parts thereof, not only in the posture of standing, but kneeling and lying down. Whereby, although the opinion at present be well suppressed, yet, from some strings of tradition, and fruitful recurrence of error, it is not improbable it may revive in the next generation again; this being not the first that hath been seen in England: for, beside some others, as Polydore Virgil relateth, Lewis the French king sent one to Henry III, and Emanuel of Portugal another to Leo X, into Italy, where, notwithstanding the error, is still alive and epidemical, as with us.

The hint and ground of this opinion might be, the gross and somewhat cylindrical composure of the legs, the equality and less perceptible disposure of the joints; especially in the former legs[5] of this animal; they appearing, when he standeth, like pillars of flesh, without any evidence of articulation. The different flexure and order of the joints might also countenance the same, being not disposed in the elephant as they are in other quadrupeds, but carrying a nearer conformity unto those of man; that is, the bought[6] of the fore-legs, not directly backward, but laterally, and somewhat inward; but the hough or suffraginous flexure behind, rather outward: somewhat different unto many other quadrupeds,[7] as horses, camels,[8] deer, sheep, and dogs; for their fore-legs bend like our legs, and their hinder legs like our arms, when we move them to our shoulders. But quadrupeds oviparous, as frogs,

and they never fail to think it necessary to demonstrate its untruth by causing the animal to bend one of its fore-legs and to kneel also; but I never saw this done, (and I have been present many times on such occasions,) without observing that it was witnessed with astonishment and almost with incredulity, by several persons present, whether the exhibition has been in London or in a provincial town. We have thus an instance of an error of the grossest and most palpable description, and one which has often from time to time been refuted, respecting an animal which is not found in the countries in which that error has been entertained, prevailing for a period of at least 2200 years, though for the last two centuries, to a greatly diminished extent. This is a fact which it will be well to bear in mind, in any enquiries respecting the probable truth of certain relations in natural history, which have at various periods, and among various nations, been generally received, but respecting the truth or falsity of which, we may not be in possession of decisive evidence.—*Br.*

[5] *former legs.*] Fore-legs: used in this case by Spenser.

[6] *the bought.*] The bend or flexure.

[7] *other quadrupeds.*] First edition added, "and such as can scratch the ear with the hinder foot."

[8] *camels.*] In the beginning of March, 1652-3, I saw a dromedary, which at the command of his master, by the word (busy) began to lye downe, first, by bending his fore-knees, and then the upper knee of the hinder legg, which is next the groine.—*Wr.*

lizards, crocodiles, have their joints and motive flexures more analogously framed unto ours: and some among viviparous, that is, such thereof as can bring their fore-feet and meat therein unto their mouths, as most can do, that have the clavicles or collar-bones, whereby their breasts are broader, and their shoulders more asunder; as the ape, the monkey, the squirrel, and some others.[9] If, therefore, any shall affirm the joints of elephants are differently framed from most of other quadrupeds, and more obscurely and grossly almost than any, he doth herein no injury unto truth.[1] But if, *à dicto secundùm quid ad dictum simpliciter*, he affirmeth also they have no articulations at all, he incurs the controlment of reason, and cannot avoid the contradiction also of sense.

As for the manner of their venation, if we consult historical experience, we shall find it to be otherwise than, as is commonly presumed, by sawing away of trees. The accounts whereof are to be seen at large in Johannes, Hugo, Edwardus Lopez, Garcias ab Horto, Cadamustus, and many more.

Other concernments there are of the elephant, which might admit of discourse. And if we should question the teeth of elephants,[2] that is, whether they be properly so termed, or might not rather be called horns,[3] it were no new enquiry of mine, but a paradox as old as Oppianus.* Whether, as Pliny and divers since affirm it, that elephants are terrified and make away upon the grunting of swine,[4] Garcias ab Horto

* *Cygenet.* lib. 2.

[9] *some others.*] As mice sometimes, and dormice always, and among birds, the parat.—*Wr.*

[1] *If, therefore, any shall affirm, &c.*] There is some inaccuracy in this sentence: the joints of the elephant are framed upon the same general plan as those of other quadrupeds belonging to the same group of mammalia, and they certainly are *not* more obscurely and grossly formed than those of any others; having merely the variation of structure rendered necessary by the magnitude and the consequent weight of the animal, as we shall presently show; but being, at the same time, as admirably formed, and as exquisitely adapted to its particular exigencies, as those of any other creature whatever.—*Br.*

[2] *elephants.*] There is another error concerning the teeth, which grow not, as most suppose, but as the tuskes of a boare proceed (like horns) from out the upper chawe, and soe bend up againe. —*Wr.*

[3] *might not rather be called horns.*] It is scarcely necessary to observe, that the tusks, as they are commonly called, of this animal, are truly *teeth*, being implanted in bones corresponding to those which carry the incisors of other animals: see *Cuvier, Règne Animal, edit. nouv.* tom. i, p. 237.—*Br.*

[4] *making away upon the grunting of swine.*] This aversion is alluded to in the following interesting passage from the *Menageries*: "But the elephant may be endued with this acute hearing, in

may decide, who affirmeth upon experience, they enter their stalls, and live promiscuously in the woods of Malavar. That the situation of the genitals is averse,[5] and their copulation like that which some believe of camels, as Pliny hath also delivered, is not to be received; for we have beheld that part in a different position; and their coition is made by supersaliency, like that of horses, as we are informed by some who have beheld them in that act. That some elephants have not only written whole sentences, as Ælian ocularly testifieth, but have also spoken, as Oppianus delivereth, and Christophorus à Costa particularly relateth,[6]—although it sound like that of Achilles' horse in Homer, we do not conceive im-

addition to his exquisite touch, for the protection of the lesser animals from the accidents to which they would be subject from lying in his path. He has an extraordinary dislike to all small quadrupeds. Dogs running near him produce a great annoyance; if a hare start from her cover, he is immediately alarmed; and that pigs are his aversion, has been recorded by every naturalist, from Pliny to Buffon. It is even mentioned by Procopius, the historian of the Persian and Gothic wars, that, at the siege of Edessa, by Chosroes, King of Persia, in the time of Justinian, the besieged Greeks employed the cry of a pig to frighten from the walls the elephants of their enemy. The old naturalists explained this peculiarity by the doctrine of antipathies: in the same way that they affirmed that the elephant was fond of an ox, upon the principle of sympathies. It may appear something equally fanciful, to suggest the possibility that the elephant may dislike the smaller animals to come in his way from his instinctive disinclination to destroy them by an accidental tread. He always avoids a contest with inferior quadrupeds whenever he can; and if a helpless living creature, such as an infant or a wounded man, lie in his way, he will move the object. The elephant is naturally gentle—anxious alone to procure his own food without molesting others. That he is so, is a merciful, as well as a wise dispensation. If he had possessed a ferocity equal to his power, he must have exterminated a very large part of the animal creation."—*Menageries*, vol. ii, p. 69, 70.—*Br.*

[5] *That the situation of the genitals, &c.*] Browne is quite correct in his statement of the manner in which coition is effected in the elephant; and from his mode of authenticating that statement, it might have been inferred, even in his time, that the notion of the modesty of the animal, or of its unwillingness or inability to continue its race in captivity, was merely a vulgar error; this, however, is not mentioned by our author. See Mr. Corse's paper, *ubi. sup.* p. 40, 43.—*Br.*

[6] *have also spoken, as Oppianus delivereth, and Christophorus à Costa particularly relateth.*] In the volume on the elephant, in the *Library of Entertaining Knowledge*, before cited, occurs the following satisfactory explanation of this relation of Acosta:—"At Cochin, according to this writer, there was an elephant that worked at the port with all the skill of a human labourer. One day, when he was much fatigued, the governor of the port desired him to assist in launching a boat. The elephant refused; and the man of authority, having in vain employed all his caresses, commanded him to do it in the name of the King of Portugal. The loyal beast, it is added, instantly replied, 'I will, I will,' and performed his task. This story may explain some of the old fables of the elephant speaking; for, in the Malabar language, 'I will,' is expressed by 'hoo,'—a very natural sound for an elephant to make, not upon the invocation of the King of Portugal, but upon the more effectual stimulus of the blow which probably accompanied the utterance of the magical name."—*Menageries*, vol. ii, p. 151.—*Br.*

possible: nor, beside the affinity of reason in this animal, any such intolerable incapacity in the organs of divers quadrupeds, whereby they might not be taught to speak, or become imitators of speech, like birds.[7] Strange it is, how the curiosity of men, that have been active in the instruction of beasts, has never fallen upon this artifice; and among those many paradoxical and unheard of imitations, should not attempt to make one speak. The serpent that spake unto Eve,[8] the dogs and cats that usually speak unto witches, might afford some encouragement. And since broad and thick chaps are required in birds that speak,[9] since lips and

[7] *might not be taught to speak, &c.*] To expatiate on the futility of our author's reasoning, as to the probability of animals being taught to speak, (to speak rationally, as he would seem to insinuate,) is needless; but it will be proper to make a few remarks on the imperfect knowledge of his subject, which renders his reasoning futile. Like almost every other author who has written upon subjects connected with the instinct of brutes, he regards their *perceptive* faculties as lower degrees of *reason*; mistaking the *analogical* relation to reason which they exhibit, (using the term analogical in the same sense, *mutatis mutandis*, as that in which it has lately been employed in natural history, by Mr. W. S. Macleay,) and by which they *represent* its attributes, for an *actual community of nature* with reason. The truth seems to be, with respect to the particular subject now before us, that brute animals, not having reason, and being consequently devoid of analytical thought, which is the activity of reason, are equally devoid of the means of uttering articulate speech, which is merely the exponent and vehicle of such thought in man. That this is the true nature of articulate speech, is proved by the fact, that those unfortunate individuals of the human race, (of whom we may cite Peter, the wild boy, as an example,) who have never been taught to *think*, and are devoid of reason, are equally devoid of the power of articulation, though their vocal organs are as perfect as those of educated men possessed of the full powers of speech. Some animals can be taught to produce sounds by their organs of voice, which closely resemble those of human speech; but sounds of this description can also be produced by inanimate machinery, as in the speaking *automata*, &c. of Kempelen and Kratzenstein; and such sounds, when uttered by animals, are indicative only of their own instinctive perceptions, like their ordinary inarticulate cries, and they are not indicative of these even in any greater degree than those cries are.

The only accurate view of the nature of the *analogue* of reason in brutes, with which I am acquainted, is contained in an enquiry into the nature of instinct, by Mr. John O. French, published in the first and second volumes of the *Zoological Journal*.

But, to proceed with our author, quadrupeds *have* been taught to "become imitators of speech like birds." Leibnitz has recorded the history of a dog, who had been taught, by the son of his master, a peasant in Saxony, to pronounce thirty different words. This fact may be regarded as throwing some degree of light upon, and rendering credible, many old relations of a similar kind, some long anterior to the time of our author. The substance of Leibnitz's account will be found in *Rees's Cyclopædia*, under the article, DOG.—*Br.*

[8] *serpent, &c.*] See my notes at the very end, and on book v, c. 4.—*Wr.*

[9] *And since broad and thick chaps are required in birds that speak.*] An error is involved in this expression parallel to that popular one, which ascribes the ability of parrots to imitate the human voice, essentially to their broad and human-like tongue. Mr. Yarrell has remarked, in his *Memoir on the Organs of Voice in Birds*, that the raven, magpie, jay, and starling, produce a close imitation of the human voice with tongues long, slender, and horny. But the proper source of

teeth are also organs of speech; from these there is also an advantage in quadrupeds, and a proximity of reason in elephants and apes [1] above them all. Since also an echo will speak without any mouth at all,[2] articulately returning the voice of man, by only ordering the vocal spirit in concave and hollow places; whether the musculous and motive parts about

correction of both errors is the knowledge we now possess, that the organ of voice, in all birds, is the inferior *larynx*, situated at the bifurcation of the *trachea*, where the *bronchiæ* go off from it to the lungs, or in other words, *at the bottom of the windpipe;* the superior *larynx* or *glottis*, opening into the cavity of the mouth, being little more than a simple slit, giving utterance to the sounds produced below, or being at most one of the accessary organs for their regulation. The true cause of the accuracy with which the birds having "broad and thick chaps," especially the parrots, imitate speech, seems to be their accurate ear for sounds of every description, together with the arrangement and functions of the muscles of their organ of voice, giving them a greater compass of voice than other birds; by which means they are enabled to imitate any kind of sound they hear: for parrots, &c. it will be remembered, imitate the ticking of a clock, or the sharpening of a saw, or a whistled tune, as accurately as they do the voice itself.

This error, however, like the greater number of those entertained by our author himself, was an almost universal one, and continued to be so until the true nature and situation of the organs of voice in birds were first accurately shewn by Cuvier, about the commencement of the present century. A summary view of the results of his investigation will be found near the end of the article, BIRDS, *Anatomy of*, in *Rees's Cyclopædia*, from the pen, we believe, of Professor Macartney, of Trinity College, Dublin, an accomplished comparative anatomist: and an excellent general account of the organs of voice in birds, illustrated by details and figures of them in many individual species, is given by Mr. Yarrell, in the paper before referred to, published in the *Transactions of the Linnean Society*, vol. xvi, p. 305.—*Br.*

[1] *apes.*] In February, 1652-3 itt was constantly reported from some of the Portugal embassador's followers, that the present King of Spain had a baboone that went upright and spake many things: whether itt bee *è Satyrorum or Cynocephalorum genere* is not sayde. The way were to gain a pregnant female, and to traine the younge by language: they about Conge beleeve they can speake, but will not, fearing least soe they might be forced to labor. Sed de hujusmodi monstris, consule *Gassendum in vitâ Pereskii*, p. 397, mira edisserentem.—*Wr.*

The author here falls into the still prevalent error, of attributing an extraordinary degree of sagacity to the apes, which, as has been observed by Cuvier, (*Règne Anim.* tom. i, p. 88,) do not in reality greatly surpass the dog in this respect, being chiefly indebted to their bodily conformation for the close resemblance of their gestures and actions to those of man.

It is almost needless to add, that Dean Wren's stories about apes speaking, or being taught to speak, are all futile and unfounded.—*Br.*

[2] *Since also an echo, &c.*] The "query of no great doubt," with which the chapter concludes, is certainly void of doubt; void, that is, of doubt that our author is wrong. It will be sufficient to observe, that an echo of human speech is merely a *reflection* of certain undulatory motions, previously impressed upon the air by the organs of speech, and that the reflected are *identical* with the original sounds, being in fact those very sounds merely caused to proceed in a new direction. The place of echo, therefore, has no share in the articulation of the sounds which are heard from it. Articulation, as before observed, is the result of analytical thought, which is peculiar to man; the brute animals which are taught to imitate it, merely frame sounds closely resembling those which they have heard from man; they never utter an original articulation of their own, whatever may be the mechanism of their organs of voice. —*Br.*

the hollow mouths of beasts may not dispose the passing spirit into some articulate notes, seems a query of no great doubt.[3]

CHAPTER II.

That the Horse hath no gall.

THE second assertion, that an horse hath no gall, is very general, nor only swallowed by the people and common farriers, but also received by good veterinarians, and some who have laudably discoursed upon horses. It seemeth also very ancient; for it is plainly set down by Aristotle; "an horse, and all solidungulous, or whole-hoofed animals, have no gall;"[4] and the same is also delivered by Pliny,[5] which, notwithstanding, we find repugnant unto experience and reason. For first, it calls in question the providence or wise provision of

[3] *Since also, &c.*] First added in the 1st edit.

[4] *It is plainly set down by Aristotle, &c.*] It is evident, from an examination of the passage in Aristotle's *History of Animals* (lib. II, cap. XV,) here referred to, that the word χολη is sometimes used by that author to denote the gall-bladder, and sometimes to denote the gall or bile itself, considered as one of the animal fluids. In the passage under consideration, it is used in the former sense, and thus understood, the assertion is strictly accurate. The gall-bladder is wanting in the horse and other solipedes. But while it is thus clear that the absence of *bile* in the horse is not affirmed by Aristotle, neither the passage itself, nor its context, prove him to have been aware of its presence; and there is some ground, therefore, for our author's animadversion. For while the bile itself in the stag and elephant is expressly alluded to, after the absence of the gall-bladder in those animals has been mentioned, that of the horse, an animal, as we have seen, in the same predicament, is not mentioned or alluded to. At the same time, from an examination of the entire chapter, it would appear, I think, that the main subject being the gall-bladder as annexed or not to the liver, in various tribes of animals, the absence of the bile, in those described as devoid of that organ, is by no means intended to be expressly stated by the writer.—*Br.*

[5] *the same is also delivered by Pliny.*] This is true; Pliny evidently borrowed his statement from the passage of Aristotle, considered above, and translating χολη by the Latin word, *fel*, applies that, as Aristotle does the former, sometimes to the gall-bladder, and sometimes to the fluid it contains.—*Hist. Nat.* lib. XI, cap. lxxiv.

A curious fact in the history of the subject appears from the notes of Hardouin, on this chapter of Pliny.—*Hist. Nat.* tom. i, p. 628. The absence of the gall-bladder in the solipedes was affirmed prior to Aristotle, by Ctesias, a circumstance which may assist, with some other correct statements now known to have been made by that writer, (see notes on book ii, c. 8,) to caution us from absolutely rejecting all his extraordinary relations; notwithstanding that (as we have seen in the notes on the preceding chapter) some of them are erroneous.—*Br.*

nature, who, not abounding in superfluities, neither is deficient in necessities. Wherein, nevertheless, there would be a main defect, and her improvision justly accusable, if such a feeding animal, and so subject unto diseases from bilious causes, should want a proper conveyance for choler, or have no other receptacle for that humour than the veins and general mass of blood.

It is again controllable by experience,[6] for we have made some search and enquiry herein; encouraged by Absyrtus, a Greek author, in the time of Constantine, who, in his *Hippiatricks*, obscurely assigneth the gall a place in the liver; but more especially by Carlo Ruini, the Bononian, who, in his *Anatomia del Cavallo*, hath more plainly described it, and in a manner as I found it. For in the particular enquiry into that part, in the concave or sinuous part of the liver, whereabout the gall is usually seated in quadrupeds, I discover an hollow, long, and membraneous substance, of a pale colour without, and lined with choler and gall within, which part is by branches diffused into the lobes and several parcels of the liver; from whence receiving the fiery superfluity, or choleric remainder, by a manifest and open passage, it conveyeth it into the *duodenum* or upper gut, thence into the lower bowels; which is the manner of its derivation in man and other animals. And, therefore, although there be no eminent and circular follicle, no round bag or vesicle which long containeth this humour, yet is there a manifest receptacle and passage of choler from the liver into the guts; which, being not so shut up, or at least not so long detained, as it is in other animals, procures that frequent excretion, and occasions the horse to dung more often than many other, which, considering the plentiful feeding, the largeness of the guts, and their various circumvolution, was prudently contrived by

6 *It is again controllable by experience.*] The contents of this paragraph evince our author's care to determine disputed points, and refute prevalent errors, by actual enquiry and observation. By a misconstruction of ancient authorities, he finds it believed that the bile is altogether absent in the horse; but, reason showing the improbability of this, and finding its presence affirmed by some authors, he dissects the liver and adjacent organs of that animal, in order to ascertain the fact. The vessel containing bile, which he discovered, is the hepatic duct, the dilatation of which, at its origin, in the horse and some other animals devoid of the gall-bladder, is so large as to form a sort of reservoir for the bile.—*Br.*

Providence in this animal. For choler is the natural glister, or one excretion whereby nature excludeth another, which descending daily into the bowels, extimulates those parts, and excites them unto expulsion. And, therefore, when this humour aboundeth or corrupteth, there succeeds, oft-times, a *cholerica passio*, that is, a sudden and vehement purgation upward and downward: and when the passage of gall becomes obstructed, the body grows costive, and the excrements of the belly white; as it happeneth in the jaundice.

If any, therefore, affirm an horse hath no gall,[7] that is, no receptacle or part ordained for the separation of choler, or not that humour at all, he hath both sense and reason to oppose him. But if he saith it hath no bladder of gall, and such as is observed in many other animals, we shall oppose our sense if we gainsay him. Thus must Aristotle be made out when he denieth this part; by this distinction we may relieve Pliny of a contradiction, who, in one place affirming an horse hath no gall, delivereth yet in another, that the gall of an horse was accounted poison; and, therefore, at the sacrifices of horses in Rome, it was unlawful for the *flamen* to touch it. But with more difficulty, or hardly at all, is that reconcileable which is delivered by our countryman, and received veterinarian; whose words in his master-piece, and chapter of diseases from the gall, are somewhat too strict, and scarce admit a reconciliation. The fallacy, therefore, of this conceit, is not unlike the former, *a dicto secundum quid ad dictum simpliciter*:—because they have not a bladder of gall, like those we usually observe in others, they have no gall at all; which is a paralogism not admittable—a fallacy that dwells not in a cloud, and needs not the sun to scatter it.

[7] *If any therefore affirm, &c.*] The concluding remarks on the subject appear to give a very just view of it, and partake of our author's logical acuteness. In the passage of Pliny, here alluded to, (*Nat. Hist.* lib. xxxviii, cap. xl,) as is manifest from the entire contents of the chapter in which it occurs, the word *fel* means the bile itself; whereas, in the former citation from that writer, it means the receptacle for the bile, or gall-bladder. The two statements, therefore, are, in reality, in perfect harmony with each other.—*Br.*

CHAPTER III.

That a Pigeon hath no gall.

THE third assertion is somewhat like the second, that a dove or pigeon hath no gall, which is affirmed from very great antiquity; for, as Pierius observeth,[8] from this consideration the Egyptians did make it the hieroglyphic of meekness.[9] It hath been averred by many holy writers, commonly delivered by postillers and commentators; who, from the frequent mention of the dove in the Canticles, the precept of our Saviour, "to be wise as serpents and innocent as doves," and especially the appearance of the Holy Ghost in the similitude of this animal, have taken occasion to set down many affections of the dove, and, what doth most commend it is, that it hath no gall. And hereof have made use, not only minor divines, but Cyprian, Austin, Isidore, Beda, Rupertus, Jansenius, and many more.

Whereto, notwithstanding, we know not how to assent, it being repugnant unto the authority and positive determina-

[8] *as Pierius observeth.*] In his *Hieroglyphica*, p. 221, n. 27; but he cites no authority for his assertion. See a remark on Pierius in note at p. 314-16.

[9] *of meekness.*] And not without excellent reason: for, whereas, all angry eruptions proceed from the more or less mixture of gall, not only in man, but other creatures; and that, when itt is seated in the liver, itt is the easier spread into all parts of the bodye, together with the blood, except he doe the more vigorously doe his office in the defæcation of the blood: it must of necessity thence follow, that where the gall is drainde from the blood by some other vessel than the liver, as by the gutts, from which itt is impossible to regurgitate into the blood, such creatures, and among them the dove especially, may be well sayd to have none in such a sense as is intended, i.e. whereby the vital parts should bee enflamed with such hot and fierye motions, as other creatures are, which have the *cista*, or vesicle of gall in the liver, the *condus* and *promus* of the blood; and by the accident of all those noxious humours which the second concoctions cannot mend: the sense, therefore, stands uncontrold, that the dove is, therefore, the emblome of meeknes, in that the gall (which begets those fiery motions in other creatures, by the neernes itt hathe to the principal enterails) is either none at all, or at least removed soe farr into the gutts, that it cannot produce such effects in her as in most other creatures itt dothe. So true is that maxime, in things of nature, *Idem est non esse et non apparere:* and *non operari* (heere) is as much as *non apparere*, and (by consequent) the same with *non esse*.—*Wr.*

The dean's ignorance of the true nature of bile is not to be wondered at; but it is very remarkable that he should have believed the Creator to have placed it, in any of his creatures, in such a situation as would prevent its exerting that influence which he had intended it to possess in the animal economy.

tion of ancient philosophy. The affirmative of Aristotle, in his *History of Animals*, is very plain—*fel aliis ventri, aliis intestino jungitur*,—some have the gall adjoined to the guts; as the crow, the swallow, sparrow, and the dove; the same is also attested by Pliny, and not without some passion by Galen, who, in his book, *De Atra Bile*, accounts him ridiculous that denies it.

It is not agreeable to the constitution of this animal, nor can we so reasonably conceive there wants a gall; that is, the hot and fiery humour in a body so hot of temper, which phlegm or melancholy could not effect. Now, of what complexion it is, Julius Alexandrinus * declareth, when he affirmeth, that some, upon the use thereof, have fallen into fevers and quinsies. The temper of their dung and intestinal excretions do also confirm the same; which topically applied, become a *phœnigmus* or rubifying medicine, and are of such fiery parts, that, as we read in Galen, they have of themselves conceived fire, and burnt a house about them. And therefore, when, in the famine of Samaria, (wherein the fourth part of a cab of pigeon's dung was sold for five pieces of silver,) it is delivered by Josephus, that men made use hereof instead of common salt: although the exposition seem strange, it is more probable than many other. For, that it containeth very much salt, as besides the effects before expressed, is discernable by taste, and the earth of columbaries or dove-houses, so much desired in the artifice of saltpetre. And to speak generally, the excrement of birds hath more of salt and acrimony, than that of any other pissing animals. Now if, because the dove is of a mild and gentle nature, we cannot conceive it should be of an hot temper, our apprehensions are not distinct in the measure of constitutions, and the several parts which evidence such conditions. For the irascible passions do follow the temper of the heart, but the concupiscible distractions the *crasis* of the liver. Now, many have hot livers, which have but cool and temperate hearts; and this was probably the temper of Paris, a contrary constitution to that of Ajax, and both but short of Medea, who seemed to exceed in either.

* *Salubrium*, 31.

Lastly, it is repugnant to experience; for anatomical enquiry discovereth in them a gall:[1] and that, according to the determination of Aristotle, not annexed unto the liver, but adhering unto the guts. Nor is the humour contained in smaller veins or obscurer capillations, but in a vesicle or little bladder, though some affirm it hath no bag at all. And therefore the hieroglyphic of the Egyptians, though allowable in the sense, is weak in the foundation: who, expressing meekness and lenity by the portrait of a dove with a tail erected, affirmed it had no gall in the inward parts, but only in the rump, and as it were out of the body.[2] And therefore also, if they conceived their gods were pleased with the sacrifice of this animal, as being without gall, the ancient heathens were surely mistaken in the reason, and in the very oblation. Whereas, in the holocaust or burnt-offering of Moses, the gall was cast away: for, as Ben Maimon instructeth, the inwards, whereto the gall adhereth, were taken out with the crop, (according unto the law,) which the priest did not burn, but cast unto the east; that is, behind his back, and readiest place to be carried out of the sanctuary. And if they also conceived that for this reason they were the birds of Venus, and, wanting the furious and discording part, were more acceptable unto the deity of love, they surely added unto the conceit; which was, at first, venereal, and in this animal may be sufficiently made out from that conception.

The ground of this conceit is partly like the former, the obscure situation of the gall, and out of the liver, wherein it is commonly enquired. But this is a very unjust illation, not well considering with what variety this part is seated in birds. In some, both at the stomach and the liver, as in the *capriceps;* in some at the liver only, as in cocks, turkeys, and pheasants; in others at the guts and liver, as in hawks and kites; in some at the guts alone, as crows, doves,[3] and many

[1] *anatomical enquiry discovereth, &c.*] It is now known that the gall-bladder does not exist in the dove: the vessel mentioned by our author is merely a dilatation of the hepatic or of the hepato-cystic duct, serving to contain the bile. This fact is in agreement with the statements of Aristotle and Pliny, which are cited in this and in the preceding page. —*Br.*

[2] *And therefore, &c.*] This statement is from Pierius, on the authority of Horapollo or Orus Apollo, in his *Hieroglyphica, curâ Pauw*, p. 105. See note 9, p. 414-16.

[3] *doves.*] Sparows, swalows, (as before.)—*Wr.*

more. And these, perhaps, may take up all the ways of situation, not only in birds, but also other animals; for what is said of the anchovy—that (answerable unto its name*) it carrieth the gall in the head, is farther to be enquired. And though the discoloured particles in the skin of an heron be commonly termed gall, yet is not this animal deficient in that part, but containeth it in the liver. And thus, when it is conceived that the eyes of Tobias were cured by the gall of the fish *callionymus* or *scorpius marinus*, commended to that effect by Dioscorides, although that part were not in the liver, yet there were no reason to doubt that probability. And whatsoever animal it was, it may be received without exception, when it is delivered, the married couple, as a testimony of future concord, did cast the gall of the sacrifice behind the altar.

A strict and literal acception of a loose and tropical expression was a second ground hereof.[4] For while some affirmed it had no gall, intending only thereby no evidence of anger or fury; others have construed it anatomically, and denied that part at all. By which illation we may infer, (and that from sacred text,) a pigeon hath no heart; according to that expression, *Factus est Ephraim sicut columba seducta non habens cor.*† And so, from the letter of Scripture, we may conclude it is no mild, but a fiery and furious animal, according to that of Jeremy,‡ *Facta est terra in desolationem, à facie iræ columbæ:* and again,§ *revertamur ad terram nativitatis nostræ, a facie gladii columbæ.* Where, notwithstanding, the dove is not literally intended; but thereby may be implied the Babylonians, whose queen, Semiramis, was called by that name, and whose successors did bear the dove in their standard. So is it proverbially said, *Formicæ sua bilis inest, habet et musca splenem;* whereas we know philosophy doubteth these parts, nor hath anatomy so clearly discovered them in those insects.[5]

* Ἐγχρασίχολος. † Hosea vii. ‡ Cap. xxv, 38. § cap. xlvi, 16.

[4] *A strict and literal acception, &c.*] This, and the concluding paragraph, furnish a very satisfactory explanation of the error discussed in the chapter; but it is probable that the absence of the gall-bladder in the dove, by being supposed to imply that of the bile itself, has also contributed to it—*Br.*

See the English version of the passages referred to in Jeremiah.

[5] *doubteth these parts, &c.*] I doe believe that, as the gall has severall recep-

If, therefore, any affirm a pigeon hath no gall, implying no more thereby than the lenity of this animal, we shall not controvert his affirmation. Thus may we make out the assertions of ancient writers, and safely receive the expressions of divines and worthy fathers. But if, by a transition from rhetoric to logic, he shall contend it hath no such part or humour, he committeth an open fallacy, and such as was probably first committed concerning Spanish mares, whose swiftness tropically expressed from their generation by the wind, might after be grossly taken, and a real truth conceived in that conception.

CHAPTER IV.

That a Beaver, to escape the hunter, bites off his testicles or stones.

THAT a beaver, to escape the hunter, bites off his testicles or stones,[6] is a tenet very ancient; and hath had, thereby, advantage of propagation. For the same we find in the hieroglyphics of the Egyptians; in the Apologue of Æsop, an author of great antiquity, who lived in the beginning of the

tacles in severall creatures (as above is mentioned) soe there's scarce any creature but hath that emunctorye somewhere. What is the poyson in the tayle of the scorpion, and the sting raye or male thornback but his gall? And soe in hornets, bees, wasps, the same. What is the poyson in the tooth of serpents, and of the lamprey, and the *mus araneus*, and the tarantula, but the gall? which according to the condition and qualitye of the creature, as the spirits that accompany those ejaculations are more subtile, aerial, or fierye, soe they appeare more or lesse furious in their effects: whereas, those parts (by which they ejaculate this gall) being taken away, the other parts become not only edible and of high nourishment, as in the thornback and lamprey, and in the honey of the bee; but in some they become the most soveraigne antidotes, as in the flesh of vipers: nay, the very spirits of some of these being received into apte bodyes, in their full strength, imprint such an alexipharmacal or alexitarial virtue into those bodyes, against all poyson, as seemes almost miraculous, as in viper wine and oyle of scorpions.—*Wr.*

[6] *That a beaver, &c.*] The arrangement, conduct, and logic, of the entire train of arguments in this chapter, are equally admirable. It displays, also, extensive and accurate knowledge of natural history and comparative anatomy.

Ross, after himself delivering a tissue of gross errors relating to eunuchs, first repeats that of the beaver, as just refuted by our author; of course *quoad* true testicles; and then, by a singular inconsistency contends, that Browne checks the ancients for this opinion without cause; and, after admitting the extirpated organs not to be true testicles, that, "if then, this be an error, it is nominal, not real."—*Arcan.* 117.—*Br.*

Persian monarchy, and in the time of Cyrus; the same is touched by Aristotle in his *Ethics;* but seriously delivered by Ælian, Pliny, and Solinus; the same we meet with in Juvenal, who by an handsome and metrical expression, more welcomely engrafts it into our junior memories;

> ———imitatus castora, qui se
> Eunuchum ipse facit, cupiens evadere damno
> Testiculorum, adeò medicatum intelligit inguen;

it hath been propagated by emblems; and some have been so bad grammarians as to be deceived by the name, deriving *castor à castrando;* whereas the proper Latin word is *fiber,*[7] and *castor* but borrowed from the Greek, so called *quasi γάστωρ,* that is, *animal ventricosum,* from his swaggy and prominent belly.

Herein, therefore, to speak compendiously, we first presume to affirm that, from a strict enquiry, we cannot maintain the evulsion or biting off any parts; and this is declarable from the best and most professed writers: for though some have made use hereof in a moral or tropical way, yet have the professed discoursers by silence deserted, or by experience rejected, this assertion. Thus was it in ancient times discovered, and experimentally refuted, by one Sestius, a physician, as it stands related by Pliny—by Dioscorides, who plainly affirms that this tradition is false—by the discoveries of modern authors, who have expressly discoursed hereon, as Androvandus, Matthiolus, Gesnerus, Bellonius[8]—by Olaus Magnus, Peter Martyr, and others, who have described the manner of their venations in America; they generally omitting this way of their escape, and have delivered several other, by which they are daily taken.

The original of the conceit was probably hieroglyphical, which after became mythological unto the Greeks, and so set down by Æsop; and by process of tradition, stole into a total verity, which was but partially true, that is, in its covert sense and morality. Now, why they placed this invention upon the beaver, (beside the medicable and merchantable com-

[7] *fiber.*] Which the Polonians by a more elegant name call *bi-fer, quasi animal biferum quod tam in terra quam in mari prædetur:* and from *(bifer)* wee call itt (corruptlye) bever.—*Wr.*

[8] *Bellonius.*] And particularly Baricellus, in his *Hortus Genealis,* p. 288. —*Wr.*

modity of *castoreum*, or parts conceived to be bitten away,) might be the sagacity and wisdom of that animal, which from the works it performs, and especially its artifice in building, is very strange, and surely not to be matched by any other. Omitted by Plutarch, *De Solertia Animalium*, but might have much advantaged the drift of that discourse.

If, therefore, any affirm a wise man should demean himself like the beaver, who, to escape with his life, contemneth the loss of his genitals, that is, in case of extremity, not strictly to endeavour the preservation of all, but to sit down in the enjoyment of the greater good, though with the detriment and hazard of the lesser, we may hereby apprehend a real and useful truth. In this latitude of belief, we are content to receive the fable of Hippomanes, who redeemed his life with the loss of a golden ball; and, whether true or false, we reject not the tragedy of Absyrtus, and the dispersion of his members by Medea, to perplex the pursuit of her father. But if any shall positively affirm this act, and cannot believe the moral, unless he also credit the fable, he is surely greedy of delusion, and will hardly avoid deception in theories of this nature. The error, therefore, and alogy,[9] in this opinion, is worse than the last; that is, not to receive figures for realities, but expect a verity in apologues, and believe, as serious affirmations, confessed and studied fables.

Again, if this were true, and that the beaver, in chace, makes some divulsion of parts, as that which we call *castoreum*, yet are not the same to be termed testicles or stones; for these cods or follicles are found in both sexes, though somewhat more protuberant in the male. There is, hereto, no derivation of the seminal parts, nor any passage from hence, unto the vessels of ejaculation: some perforations only in the part itself, through which the humour included doth exudate, as may be observed in such as are fresh, and not much dried with age. And lastly, the testicles, properly so called, are of a lesser magnitude, and seated inwardly upon the loins:[1] and, therefore, it were not only a fruitless attempt, but impossible act, to eunuchate or castrate them-

[9] *alogy.*] Unreasonableness, absurdity; from an old French word, *alogie*. —*Wr.*

[1] *loins.*] Idem Baricellus, (ut supra.)

selves; and might be an hazardous practice of art, if at all attempted by others.

Now, all this is confirmed from the experimental testimony of five very memorable authors;—Bellonius, Gesnerus, Amatus, Rondeletius, and Matthiolus,—who, receiving the hint hereof from Rondeletius, in the anatomy of two beavers, did find all true that had been delivered by him; whose words are these, in his learned book, *De Piscibus*:—*Fibri in inguinibus geminos tumores habent, utrinque unicum, ovi anserini magnitudine; inter hos est mentula in maribus, in fœminis pudendum: hi tumores testes non sunt, sed folliculi membranâ contecti, in quorum medio singuli sunt meatus, è quibus exudat liquor pinguis et cerosus, quem ipse castor sæpe admoto ore lambit et exugit, postea veluti oleo, corporis partes oblinit. Hos tumores testes non esse hinc maximè colligitur, quòd ab illis nulla est ad mentulam via neque ductus quò humor in mentulæ meatum derivetur, et foras emittatur; præterea quòd testes intus reperiuntur, eosdem tumores moscho animali*[2] *inesse puto, è quibus odoratum illud pus emanat.* Than which words there can be no plainer, nor more evidently discovering the impropriety of this appellation. That which is included in the cod or visible bag about the groin, being not the testicle or any spermatical part, but rather a collection of some superfluous matter deflowing from the body, especially the parts of nutrition as unto their proper emunctories, and as it doth in musk and civet cats; though in a different and offensive odour; proceeding partly from its food—that being especially fish—whereof this humour may be a garous[3] excretion and olidous[4] separation.

Most, therefore, of the moderns, before Rondeletius, and all the ancients, excepting Sestius, have misunderstood this part, conceiving *castoreum* the testicles of the beaver; as Dioscorides, Galen, Ægineta, Ætius, and others, have pleased to name it. The Egyptians also failed in the ground of their hieroglyphic, when they expressed the punishment of adult-

[2] *Moscho, &c.*] Hee means the civit cat.—*Wr.*

[3] *garous.*] Resembling *garum*, a pickle in which fish had been preserved.

[4] *olidous.*] Stinking.

cry by the beaver depriving himself of his testicles, which was amongst them the penalty of such incontinency.[5] Nor is Ætius, perhaps, too strictly to be observed, when he prescribeth the stones of the otter, or river dog, as succedaneous unto *castoreum*. But most inexcusable of all, is Pliny; who having before him, in one place, the experiment of Sestius against it, sets down in another, that the beavers of Pontus bite off their testicles; and in the same place affirmeth the like of the hyæna: which was indeed well joined with the beaver, as having also a bag in those parts; if, thereby, we understand the hyæna odorata, or civet cat, as is delivered and graphically described by Castellus.[6] *

Now, the ground of this mistake might be the resemblance and situation of these tumours about those parts, wherein we observe the testicles in other animals; which, notwithstanding, is no well founded illation; for the testicles are defined by their office, and not determined by place or situation; they having one office in all, but different seats in many. For,—beside that no serpent or fishes oviparous, that neither biped nor quadruped oviparous,[7] have any exteriorly or prominent in the groin,—some also that are viviparous contain these parts within, as beside this animal, the elephant and the hedgehog.[8]

If any, therefore, shall term these testicles, intending metaphorically, and in no strict acception, his language is tolerable, and offends our ears no more than the tropical names of plants, when we read in herbals, of dogs, fox, and goat-stones. But if he insisteth thereon, and maintaineth a propriety in this language, our discourse hath overthrown his assertion, nor will logic permit his illation; that is, from things alike, to conclude a thing the same, and from an accidental convenience, that is, a similitude in place or figure, to infer a specifical congruity or substantial concurrence in nature.

* *Castellus de Hyæna Odorifera.*

[5] *ground of their hieroglyphic, &c.*] Pierius (131. c.) is the authority for this explanation;—but he differs therein from Horapollo, who says, "quomodo hominem, qui sibi ipsi damni et pernicici autor sit."—*Hor. Hier.* p. 117. See note (9) at page 414-16.

[6] *Which was indeed, &c.*] First added in the 2nd edition.

[7] *quadruped oviparous.*] As the crocodile, which is both quadruped and oviparous, and next the tortoise.—*Wr.*

[8] *hedgehog.*] And the porcupine.—*Wr.*

CHAPTER V.

That a Badger hath the legs of one side shorter than of the other.

THAT a brock, or badger, hath the legs on one side shorter than of the other, though an opinion, perhaps, not very ancient, is yet very general; received not only by theorists and unexperienced believers, but assented unto by most who have the opportunity to behold and hunt them daily.[9] Which, notwithstanding, upon enquiry, I find repugnant unto the three determinators of truth—authority, sense, and reason. For first, Albertus Magnus speaks dubiously, confessing he could not confirm the verity hereof; but Aldrovandus plainly affirmeth there can be no such inequality observed: and for my own part, upon indifferent enquiry, I cannot discover this difference, although the regardable side be defined, and the brevity by most imputed unto the left.

Again, it seems no easy affront unto reason, and generally repugnant unto the course of nature; for if we survey the total set of animals, we may, in their legs, or organs of progression, observe an equality of length, and parity of numeration; that is, not any to have an odd leg, or the supporters and movers of one side not exactly answered by the other. Although the hinder may be unequal unto the fore and middle legs, as in frogs, locusts, and grasshoppers; or both unto the middle, as in some beetles and spiders, as is determined by Aristotle.* Perfect and viviparous quadrupeds, so standing in their position of proneness, that the opposite joints of neighbour legs consist in the same plane; and a line descending from their navel intersects at right angles the axis of the earth. It happeneth often, I confess, that a lobster hath the

* *De Incessu Animalium.*

[9] *assented unto, &c.*] The popular belief among the peasantry is, that, in running through a ploughed field, the animal always runs with his longer legs in the furrow.

chely or great claw of one side longer than the other;[1] but this is not properly their leg, but a part of apprehension, and whereby they hold or seize upon their prey; for the legs and proper parts of progression are inverted backward, and stand in a position opposite unto these.

Lastly, the monstrosity is ill contrived, and with some disadvantage; the shortness being affixed unto the legs of one side, which might have been more tolerably placed upon the thwart or diagonal movers. For the progression of quadrupeds being performed *per diametrum*, that is, the cross legs moving or resting together, so that two are always in motion, and two in station at the same time,[2] the brevity had been more tolerable in the cross legs. For then the motion and station had been performed by equal legs; whereas, herein, they are both performed by unequal organs, and the imperfection becomes discoverable at every hand.

[1] *a lobster, &c.*] This never happens, but when one is by chance wrung off, when they are young, by a bigger lobster, which growing out againe, can never reach the greatnes of the other: the fishermen finde this continually to be true, and saye they seldome have a drafte of them, wherein some of them come not up thus grapled by the claw. I have often seene them brought up with half the claw newly nipt off, or else closed up againe with a cartilage, and sometimes with one only chlea, for soe itt should be written, cominge manifestly from χηλὴ, which signifies properly the tongs or pincher, the chlea of a lobster or of a crab.—*Wr.*

Upon this theory, the vulgar pronunciation, *cla*, is more correct than *claw*.

The dean assigns the true cause of that inequality often observed in the legs of crabs. But he is wrong in supposing the lost claw to have been bitten off by other crabs. There exists in this tribe (as well as in spiders and some other insects) a very curious provision, enabling the animal to throw off instantly a limb (or *antenna*) which has been so injured as to be useless; thus making way for the reproduction of the part. In the great majority of cases, the mutilation observed has resulted from the exercise of this power. See some curious instances detailed by Dr. Heineken, in the *Zoological Journal* (vol. iv, p. 285;) and Dr. Mac Culloch's anatomical description of the process, in the 20th vol. of the *Journal of the Royal Institution*.

[2] *For the progression, &c.*] From this rule must be excepted the camel. "The mode of the camel's walk, as described by Aristotle (*Hist. Anim.* lib. II, cap. i, p. 480, *Casaubon. Lugdun.* 1590,) is, by raising the two legs of the same side, the one immediately after the other; not moving the legs diagonally, in the manner of most other quadrupeds."—*Rees's Cyclopædia*, article, CAMELUS.—*Br.*

CHAPTER VI.

That a Bear brings forth her Cubs informous or unshaped.

THAT a bear brings forth her young informous and unshapen, which she fashioneth after by licking them over, is an opinion not only vulgar, and common with us at present, but hath been of old delivered by ancient writers. Upon this foundation it was an hieroglyphic with the Egyptians;[3] Aristotle seems to countenance it; Solinus, Pliny, and Ælian, directly affirm it, and Ovid smoothly delivereth it;

> Nec catulus partu quem reddidit ursa recenti
> Sed malè viva caro est, lambendo mater in artus
> Ducit, et in formem qualem cupit ipsa reducit.

Which, notwitstanding, is not only repugnant unto the sense of every one that shall enquire into it, but the exact and deliberate experiment of three authentic philosophers. The first, of Matthiolus in his *Comment on Dioscorides* whose words are to this effect:—"In the valley of Anania, about Trent, in a bear which the hunters eventerated[4] or opened, I beheld the young ones with all their parts distinct, and not without shape, as many conceive—giving more credit unto Aristotle and Pliny, than experience and their proper senses." Of the same assurance was Julius Scaliger, in his *Exercitations; Ursam fœtus informes potius ejicere, quam parere, si vera dicunt, quos postea linctu effingat. Quid hujusce fabulæ authoribus fidei habendum, ex hac historia cognosces; in nostris alpibus venatores fœtam ursam cepêre, dissectâ eâ fœtus planè formatus intus inventus est.* And lastly, Aldrovandus, who from the testimony of his own eyes affirmeth, that in the cabinet of the senate of Bononia, there was preserved in a glass, a cub, taken out of a bear, perfectly formed, and complete in every part.

[3] *it was an hieroglyphic.*] Pierius, 131, c. and Horapollo, 117. See note 9, at page 414-16.

[4] *eventerated.*] Ript up, by opening the belly. Browne is the only authority given in Johnson.

It is, moreover, injurious unto reason, and much impugneth the course and providence of nature, to conceive a birth should be ordained before there is a formation. For the conformation of parts is necessarily required, not only unto the pre-requisites and previous conditions of birth, as motion and animation, but also unto the parturition or very birth itself: wherein not only the dam, but the younglings play their parts, and the cause and act of exclusion proceedeth from them both. For the exclusion of animals is not merely passive like that of eggs, nor the total action of delivery to be imputed unto the mother,[5] but the first attempt beginneth from the infant, which, at the accomplished period, attempteth to change his mansion, and, struggling to come forth, dilacerates and breaks those parts which restrained him before.

Besides, (what few take notice of,) men hereby do, in an high measure, vilify the works of God, imputing that unto the tongue of a beast, which is the strangest artifice in all the acts of nature; that is, the formation of the infant in the womb, not only in mankind, but all viviparous animals. Wherein the plastic or formative faculty, from matter appearing homogeneous, and of a similary substance, erecteth bones, membranes, veins, and arteries; and out of these contriveth every part in number, place, and figure, according to the law of its species: which is so far from being fashioned by any outward agent, that one omitted or perverted by a slip of the inward Phidias, it is not reducible by any other whatsoever: and therefore *Mirè me plasmaverunt manus tuæ*, though it originally respected the generation of man, yet is it appliable unto that of other animals; who, entering the womb in bare and simple materials, return with distinction of parts, and the perfect breath of life. He that shall consider these alterations without, must needs conceive there have been strange operations within: which to behold, it were a spectacle almost worth one's being—a sight beyond all; except that man had been created first, and might have seen the shew of five days after.

[5] *For the exclusion, &c.*] The fœtus is passive, and is expelled wholly by the efforts of the mother: a dead fœtus is as readily born as a living one; although a vulgar error prevails to the contrary.

Now, as the opinion is repugnant both unto sense and reason, so hath it probably been occasioned from some slight ground in either. Thus, in regard, the cub comes forth involved in the *chorion*, a thick and tough membrane obscuring the formation, and which the dam doth after bite and tear asunder; the beholder at first sight conceives it a rude and informous lump of flesh, and imputes the ensuing shape unto the mouthing of the dam; which addeth nothing thereunto, but only draws the curtain, and takes away the vail which concealed the piece before. And thus have some endeavoured to enforce the same from reason; that is, the small and slender time of the bear's gestation, or going with her young; which lasting but a few days, (a month some say,) the exclusion becomes precipitous, and the young ones, consequently, informous,[6] according to that of Solinus, *Trigesimus dies uterum liberat ursæ: unde evenit ut præcipitata fœcunditas informes creet partus.* But this will overthrow the general method or nature in the works of generation. For therein the conformation is not only antecedent, but proportional unto the exclusion; and if the period of the birth be short, the term of conformation will be as sudden also. There may, I confess, from this narrow time of gestation, ensue a minority or smallness in the exclusion; but this, however, inferreth no informity, and it still receiveth the name of a natural and legitimate birth: whereas, if we affirm a total informity, it cannot admit so forward a term as an abortment,* for that supposeth conformation; so we must call this constant and intended act of nature, a slip or effluxion, that is, an exclusion before conformation,—before the birth can bear the name of the parent, or be so much as properly called an embryon.

* Ἔκχυσις.

[6] *informous.*] The *bearling*, though blind like most other *beastlings*, is not *informous*. It owes the discipline in question to that instinct which secures to the young of all animals, on their first appearance, the same species of maternal attention. Cuvier describes the cub of the black bear as measuring six or eight inches, devoid of teeth, covered with hairs, and having the eyes closed.

There is, however, another popular saying about the young of the bear which does not seem so easily disposed of;—its deriving nutriment from sucking its paws. The following graphic passage explains the fact. Speaking of a cub of the Norway bear, in the French Menagerie, Cuvier says, it "was particularly fond of sucking its paws, during which operation it always sent forth a uniform and constant murmur, something like the sound of a spinning-wheel. This ap-

CHAPTER VII.

Of the Basilisk.

MANY opinions are passant concerning the basilisk, or *little king* of serpents, commanly called the cockatrice; some affirming, others denying, most doubting the relation made hereof. What, therefore, in these uncertainties we may more safely determine; that such an animal there is, if we evade not the testimony of Scripture and human writers, we cannot safely deny. So is it said, Psalm xci, *Super aspidem et basiliscum ambulabis*, wherein the vulgar translation retaineth the word of the Septuagint, using in other places the Latin expression, *regulus;* as Proverbs xxiii, *Mordebit ut coluber, et sicut regulus venena diffundet:*[7] and Jeremy viii, *Ecce ego mittam vobis serpentes regulos, &c.*—that is, as ours

peared to be an imperious want with it, and it was surprising to observe the ardour with which it commenced the operation, and the enjoyment which it seemed to derive from it. The belief, which once so generally obtained, that these animals, during the season which they pass without eating, and surrounded by snows, support themselves by sucking their paws, seems not utterly without foundation. In truth, every natural action must have a tendency to some useful end, though it has not been observed that the bear extracts any thing from its paws by the act of suction. After all, it is more probable that bears lick their paws, as cats do, from a love of cleanliness, or merely in consequence of some pleasing sensation which nature has attached to the act, for inexplicable reasons, rather than for sustenance."—*Cuvier's Animal Kingdom, by Griffiths*, vol. ii, 220.—*Ed.*

The following note occurs in Dr. Richardson's account of the quadrupeds and birds collected in Captain Parry's second voyage to the Arctic Regions, published in the *Zoological Appendix* to the journal of that voyage, p. 290. "The female black or brown bears conceal their retreats with such care that they are extremely rarely killed when with young. Hence the ancients had an opinion that the bear brought forth unformed masses, and afterwards licked them into shape and life. Sir Thomas Browne cites many facts in opposition to this notion, some of which are quoted in *Shaw's Zoology*, and similar and more recent facts are noticed in *Warden's Account of the United States*, vol. i, p. 195. After numerous enquiries amongst the Indians of Hudson's Bay, only one was found who had killed a pregnant bear. He stated that the den she had constructed was smaller than that usually made by the unimpregnated female."—*Br.*

[7] *diffundet.*] Note the worde *diffundet*, which intimates a strange kind of poysoning *(undequâque,)* most probably infecting the heart of him that approaches, by the breath drawne into the very heart immediately, then by the eye, which requires a longer way then the maner of infection is wont to take, killing in an instant, irrecoverablye, and diverse have perished by his spreading poyson in the dark holes, where they could never see the serpent. To which the story in Sennertus seems to add strong proofe.—*W'r.*

translate it, "Behold I will send serpents, cockatrices among you, which will not be charmed, and they shall bite you." And as for human authors, or such as have discoursed of animals, or poisons, it is to be found almost in all: in Dioscorides, Galen, Pliny, Solinus, Ælian, Ætius, Avicen, Ardoynus, Grevinus, and many more. In Aristotle, I confess, we find no mention thereof, but Scaliger, in his *Comment and Enumeration of Serpents*, hath made supply; and in his *Exercitations* delivereth, that a basilisk was found in Rome, in the days of Leo the Fourth. The like is reported by Sigonius; and some are so far from denying one, that they have made several kinds hereof; for such is the *Catoblepas*[8] of Pliny conceived to be by some, and the *Dryinus* of Ætius by others.

But although we deny not the existence of the basilisk, yet, whether we do not commonly mistake in the conception hereof, and call that a basilisk which is none at all, is surely to be questioned. For certainly that, which, from the conceit of its generation, we vulgarly call a cockatrice, and wherein (but under a different name) we intend a formal identity and adequate conception with the basilisk, is not the basilisk of the ancients, whereof such wonders are delivered. For this of ours is generally described with legs, wings, a serpentine and winding tail, and a crest or comb somewhat like a cock. But the basilisk of elder times was a proper kind of serpent, not above three palms long,[9] as some account, and differenced

8 *Catoblepas.*] This name is now appropriated to a genus containing the gnoo, and several species. The animal so called by Ælian is supposed by Cuvier to have been of this genus.

9 *was a proper kind of serpent, &c.*] A distinction must be taken between the *basilisk* (or cockatrice) of Scripture, and that which is so called by modern naturalists; it seems most probable that the former was intended to denote the *naja* or *cobra capello* of the Portuguese.

Under the name of basilisk is at present designated a genus of reptiles, of the *saurian* order, which exhibit many affinities with the *iguanes* and *monitors*. No animal, perhaps, has been the subject of so great a number of prejudices as the one now under consideration. The most ancient authors have spoken of the basilisk as of a serpent which had the power of striking its victim dead by a single glance. Others have pretended that it could not exercise this faculty, unless it first perceived the object of its vengeance before it was itself perceived by it. It was also most absurdly imagined to proceed from the eggs of old cocks. Aldrovandus, and several other writers, have given figures of it. They have represented it with eight feet, a crown on the head, and a hooked and recurved beak. Pliny assures us that the serpent, named basilisk, has a voice so terrible, that it strikes terror into all other species—that it thus chases them from the spot which

from other serpents by advancing his head, and some white marks or coronary spots upon the crown, as all authentic writers have delivered.

Nor is this cockatrice only unlike the basilisk, but of no real shape in nature, and rather an hieroglyphical fancy, to express different intentions, set forth in different fashions.[1]

it inhabits, and of which it retains the sole and undisputed dominion. The name indeed, basilisk, in Greek, signifies royal. The fantastic forms and fabulous properties thus attributed to an animal which, most probably, never had an existence, rendered this name too celebrated for naturalists not to endeavour to apply it to another species, which accordingly they did. Seba figured a species of lizard, whose head is surmounted with projecting lines, and the back furnished with a broad vertical crest, which extends as far as over the tail, and which that author believed to be intended for the purposes of flight. He has designated it under the name of basilisk, or dragon of America, a flying amphibious animal. This is the animal which has subsequently been described in all works of natural history, under the name of basilisk."—*Cuvier's Animal Kingdom*, vol. ix, p. 226.

[1] *an hieroglyphical fancy, &c.*] This is also from Pierius, (175, A.) The Bembine, or Isiac table, Dr. Young has shewn to be the work of a Roman sculptor, imitating only the general style of the separate delineations of the Egyptian tablets. The inscriptions neither have any relation to the figures over which they are placed, nor form any connected sense of their own. It may be concluded, therefore, that although (presuming the imitation to be accurate) the Isiac table may be regarded as second-rate authority for the *delineation* of the separate figures and hieroglyphics it contains, it is devoid of all authority as shewing their collocation.—EGYPT, *in Sup. to Ency. Brit.* 74. Isis is sometimes personified as a basilisk.—*Ib.* 58. Mneuis, as a basilisk and a tear.—*Ib.* 59, D. The asp and basilisk are both employed as the symbol of divinity.—*Ib.* 55.

The *ibis*, mentioned in this chapter, is the hieroglyphic of the Egyptian god, Thoth, or Hermes, the secretary of Osiris.—*Ib.* 11.

With the exception of the basilisk, and perhaps the deer, not one of the animals named by Sir Thomas, as used hieroglyphically, is mentioned as an Egyptian hieroglyphic in Dr. Young's article, Egypt. Indeed, in my opinion, the others have the character of a spurious origin, having probably arisen towards the dark ages, when significations were *invented* for the ancient fables.

Nor are they, if we add to the exceptions "*le lézard*," (as the salamander,) *les quadrupedes à tête d'oiseau*, (as the griffin,) and "*le vipere*," either mentioned or figured by Champollion; but as the hieroglyphic texts present images of all kinds of natural objects, including mammalia, birds, reptiles, amphibia, fishes, and insects; and of the second class "*une foule*," (Champollion enumerating, among the eight hundred and sixty-four characters contained in those texts, thirty-four quadrupeds and fifty birds and their parts,) it is probable that the *real* animals *may have been used* among the objects hieroglyphically employed; but the alleged grounds of their respective use are most likely erroneous. I should rather doubt, however, the use of the beaver, an animal scarcely likely to have been known to the Egyptians.

The *bear* may possibly be in the same predicament, especially as there appears to be no name for that animal in Egyptian, for Champollion informs us, that the name for lion in that language, (labo, laboi, or lifòi,) is a compound word, meaning *valde hirsutus*, "et que c'est dans ce sens qu'on aurait aussi quelquefois appliqué ce nom à l'ours, dans la version Egyptienne des livres saints; *Apocalypse*, xiii, 2.") This indicates that there was no name for the bear in Egyptian, as above noted, and if that were the case, it is clear there could be no hieroglyphic of it.

Browne's authority for the alleged Egyptian hieroglyphics he mentions in this book, are—Horapollo and Pierius—but principally the latter. From looking over Pierius, his explanations appear to be, perhaps always, fallacious; being

Sometimes with the head of a man, sometimes with the head of an hawk, as Pierius hath delivered, and as, with addition of legs, the heralds and painters still describe it. Nor was it only of old a symbolical and allowable invention, but is now become a manual contrivance of art and artificial imposture; whereof, besides others, Scaliger hath taken notice: *Basilisci formam mentiti sunt vulgò gallinaceo similem, et pedibus binis;*[2] *neque enim absimiles sunt cæteris serpentibus, nisi macula quasi in vertice candida, unde illi nomen regium;* that is, "men commonly counterfeit the form of a basilisk with another like a cock, and with two feet; whereas, they differ not from other serpents, but in a white speck upon their crown." Now, although in some manner it might be counterfeited in Indian cocks and flying serpents, yet is it commonly contrived out of the skins of thornbacks, skaits, or maids, as Aldrovand hath observed, and also graphically described in his excellent book of fishes, and for satisfaction of my own curiosity, I have caused some to be thus contrived out of the same fishes.

Nor is only the existency of this animal considerable, but many things delivered thereof, particularly its poison and its generation. Concerning the first, according to the doctrine of the ancients, men still affirm, that it killeth at a distance, that it poisoneth by the eye, and by priority of vision. Now, that deleterious it may be at some distance, and destructive without corporal contaction, what uncertainty soever there be in the effect, there is no high improbability in the relation. For if plagues or pestilential atoms have been conveyed in the air from different regions—if men at a distance have in-

founded on the misconception, before noted, as arising in the dark ages.

With respect to Horapollo, the following extract, from *Dr. Young's Discoveries in Hieroglyphical Literature*, will shew the degree of reliance to be placed in him. After speaking of the traditional record of the true sense of the handled cross, he proceeds:—"We also find some imperfect hints of a partial knowledge of the sense of the hieroglyphics in the *puerile work* of Horapollo, which is much more like a collection of conceits and enigmas, than an explanation of a real system of serious literature: and while such scattered truths were confounded with a multitude of false assertions, it was impossible to profit by any of them, without some clue to assist us in the selection."

[2] *pedibus binis.*] As was that kept in the physick schooles in Oxon, of a most elegant forme, and as it seemes of a dusky, but transparent, substance, like glew, and as if shaped in a molde.—*Wr.*

fected each other—if the shadows of some trees be noxious[3] —if torpedos deliver their opium at a distance, and stupify beyond themselves,[4] we cannot reasonably deny, that (beside our gross and restrained poisons requiring contiguity unto their actions,) there may proceed, from subtiler seeds, more agile emanations, which contemn those laws, and invade at distance unexpected.

That this venenation shooteth from the eye,[5] and that this way a basilisk may empoison—although thus much be not

[3] *if the shadows of some trees, &c.*] Later investigation has proved that the awful stories put forth in the latter end of the eighteenth century, of the poisonous character of the upas-tree, were impudent forgeries. For the assertion to which this passage alludes, viz. that its shadow is poisonous, there is certainly no foundation. In the island of Java, there are two trees which produce a very deadly poison; but the birds, nevertheless, perch on their branches in safety, and the natives collect their poisonous juices with impunity, and even wear a coarse stuff prepared from their bark.

[4] *at a distance, &c.*] The electrical shock of the torpedo, although it may be received without actual contact, cannot be communicated from a distance but by means of some conducting medium. Indeed, it is found, that both the gymnote and torpedo are limited to precisely the same conducting and non-conducting mediums as are met with in common electricity.

[5] *That this venenation, &c.*] Cuvier, on this point, makes the following observation in reference to the rattle-snake: —"It was for a long time believed it had the power of torpifying by its breath, and even of fascinating, that is, of forcing its prey, by its glance alone, to precipitate themselves into its mouth. It appears, however, that it is enabled to seize them only during those irregular movements which the fear of its aspect causes them to make."—See *Burton's Memoir on the Faculty of Fascination attributed to the Rattle-snake:* Philadel. 1796. But the subject is more fully adverted to in the following passage, in the supplementary observations on the Ophidians.

"It has been almost universally believed, that by certain special emanations, by the fear which they inspire, or even by a sort of magnetic or magic power, the serpents can stupify and fascinate the prey which they are desirous to obtain. Pliny attributes this kind of *asphyxia* to a nauseous vapour proceeding from these animals; an opinion which seems to receive confirmation from the facility with which, by the assistance of smell alone, the negroes and native Indians can discover serpents in the savannahs of America. Count de Lacépède seems inclined to adopt this notion in his history of serpents.

"P. Kalm assures us, that being fixedly regarded by a serpent hissing, and darting its forked tongue out of its mouth, the squirrels are, as it were, constrained to fall from the summit of the trees into the mouth of the reptile, which swallows them up. According to the report of many travellers, one would think that by the effect of some charm, the *durissus* and *boiquira*, those redoubtable rulers of the steppes of America, possess the power of forcing their prey into their mouths. At their aspect, it is said, that hares, rats, frogs, and other reptiles, seem petrified with terror, and far from attempting to fly, will precipitate themselves upon the fate which awaits them. Even at a sufficient distance for escape, they are paralyzed by the sight of their tremendous foe, and deprived of all their faculties in a manner that appears wholly supernatural.

"But this fact, which is so interesting in animal physiology, is not only far from being clearly explained, but even far enough from being sufficiently demonstrated. Notwithstanding the ingenious conjectures of Sir Hans Sloane on this subject, the observations of Kalm, whose assertions were implicitly received by Linnæus; those of Lawson, Catesby, Brickel, Beverley, Bancroft, and Bartram; notwithstanding a work pub-

agreed upon by authors, some imputing it unto the breath, others unto the bite—it is not a thing impossible. For eyes receive offensive impressions from their objects, and may have influences destructive to each other. For the visible species of things strike not our senses immaterially, but streaming in corporal rays, do carry with them the qualities of the object from whence they flow, and the medium through which they pass. Thus, through a green or red glass, all things we behold appear of the same colours; thus sore eyes affect those which are sound, and themselves also by reflection, as will happen to an inflamed eye that beholds itself long in a glass; thus is fascination made out, and thus also it is not impossible, what is affirmed of this animal, the visible rays of their eyes carrying forth the subtilest portion of their poison, which received by the eye of man or beast, infecteth first the brain,[6] and is from thence communicated unto the heart.[7]

But lastly, that this destruction should be the effect of the first beholder, or depend upon priority of aspection, is a point not easily to be granted,[8] and very hardly to be made

lished *ex professo* on the matter, by Dr. Burton, of Philadelphia, and notwithstanding some recent accounts by Major Gordon, of this stupifying power in the serpents, which he attributes both to the terror which they inspire, and to certain narcotic emanations from their bodies at particular times, it must be confessed that this subject is still liable to controversy, and still involved in a considerable degree of obscurity."—*Griffith's Cuvier*, ix, 311, 312. There is a very interesting lecture on this subject, in *Dr. Good's Book of Nature*, vol. ii, lec. 6.

[6] *brain.*] And why not by the smel rather, and from thence to the braine, as for the most part happens by contagion in time of the plague. Soe the poysonous breath of the basiliske, spreading far through the aire in those hot countryes of Africa, may easily surprise those that unawares come neer his denn. —*Wr.*

[7] *heart.*] But yf by the serpent's priority of vision, how comes itt to effect the eye first, but that coming unawares within the contagion of his deadly breath, a man is infected before he sees his mischeef. And which is most likely? by the poyson some smel immediately drawne to the harte with the pestilent air in those burning countryes; or by the eye into the braine, and thence to the harte, whereof noe man can justify the trueth, and may more justly bee denyed then granted, being farther fetcht, only infered by way of consequence to make good their assertion. Yf, then, the infection bee not receaved by the eye, as heere the learned Dr. [seems?] to opine, by what other way can it bee possibly received, but by the infected ayre immediately drawne into the heart? which I suppose the following discourse will cleere.—*Wr.*

[8] *not easily, &c.*] This velitation will [be] needles, yf as before, and is most probable, wee conceive the infection of the basiliske to fasten upon the smel rather then the eye; both these senses, and indeed the five senses, being made by reception only, and not by extramission. Soe that his powerful poyson, which proceeds from his breath, rather then his eye, may invade the sense of smelling, and consequently destroy a man hereby; or may sudenly destroy the harte by drawing in that poysonous aire. —*Wr.*

out upon the principles of Aristotle, Alhazen, Vitello, and others, who hold, that sight is made by reception, and not by extramission; by receiving the rays of the object into the eye, and not by sending any out. For hereby, although he behold a man first, the basilisk should rather be destroyed, in regard he first receiveth the rays of his antipathy and venomous emissions, which objectively move his sense; but how powerful soever his own poison be, it invadeth not the sense [9] of man, in regard he beholdeth him not. And therefore this conceit was probably begot by such as held the opinion of sight by extramission; as did Pythagoras, Plato, Empedocles, Hipparchus, Galen, Macrobius, Proclus, Simplicius, with most of the ancients, and is the postulate of Euclid in his *Opticks*, but now sufficiently convicted from observations of the dark chamber.[1]

As for the generation of the basilisk, that it proceedeth from a cock's egg, hatched under a toad or serpent, it is a conceit as monstrous [2] as the brood itself. For if we should grant, that cocks growing old, and unable for emission, amass within themselves some seminal matter, which may after conglobate into the form of an egg, yet will this substance be unfruitful. As wanting one principle of generation, and a

[9] *sense.*] eye.—*Wr.*

[1] *but now, &c.*] Instead of this concluding line, (first added in the 2nd edit.) the following curious passage terminated the paragraph in the 1st edit. p. 120;—"and of this opinion might they be, who from this antipathy of the basilisk and man, expressed first the enmity of Christ and Satan, and their mutual destruction thereby; when Satan, being elder than his humanity, beheld Christ first in the flesh, and so he was destroyed by the serpent; but elder than Satan in his divinity, and so beholding him first, he destroyed the old basilisk, and overcame the effect of his poison, sin, death, and hell."

On this passage, Dean Wren, (who used the 1st edition,) drily remarks:—"This argument is but symbolical, and concludes nothing."

[2] *a conceit as monstrous.*] At the end of the volume for 1710, of the *History of the French Royal Academy*, is a curious account, transmitted by M. Lapeyronie from Montpellier, of some "cock's eggs," which a farmer had brought to him, with the assurance that they were laid by a cock, and would be found to contain, instead of yolk, the embryo of a serpent. One of these eggs, opened in the presence of several *scavans*, was found devoid of yolk, but exhibiting a coloured particle in the centre, which was considered as the young serpent. The cock having been given up to M. Lapeyronie for dissection, the farmer very soon brought some more of these little eggs,—having discovered that they were laid by a hen! Anatomical figures accompany the paper.

The conceit, however, is not too monstrous for the belief of Al. Ross—who asks, "Why may not this serpent be ingendred of a cock's putrified seminal materials, being animated by his heat and incubation as well as other kinds of serpents are bred of putrified matter?"—*Arcana*, p. 146.

commixture of the seed of both sexes, which is required unto production, as may be observed in the eggs of hens not trodden, and as we have made trial in some which are termed cock's eggs. It is not indeed impossible, that from the sperm of a cock, hen, or other animal, being once in putrescence, either from incubation or otherwise, some generation may ensue; not univocal and of the same species, but some imperfect or monstrous production, even as in the body of man, from putrid humours and peculiar ways of corruption, there have succeeded strange and unseconded shapes of worms,[3] whereof we have beheld some ourselves, and read of others in medical observations. And so may strange and venomous serpents be several ways engendered; but that this generation should be regular, and always produce a basilisk, is beyond our affirmation, and we have good reason to doubt.

Again, it is unreasonable to ascribe the equivocancy of this form unto the hatching of a toad, or imagine that diversifies the production. For incubation alters not the species, nor if we observe it, so much as concurs either to the sex or colour: as appears in the eggs of ducks or partridges hatched under a hen, there being required unto their exclusion only a gentle and continued heat, and that not particular or confined unto the species or parent. So have I known the seed of silkworms hatched on the bodies of women:[4] and Pliny reports, that Livia, the wife of Augustus, hatched an egg in her bosom. Nor is only an animal heat required hereto, but an elemental and artificial warmth will suffice: for, as Diodorus delivereth, the Egyptians were wont to hatch their eggs in ovens, and many eye-witnesses confirm that practice unto this day. And, therefore, this generation of the basilisk seems like that of Castor and Helena; he that can credit the one, may easily believe the other; that is, that these two were hatched out of the egg which Jupiter, in the form a swan, begat on his mistress, Leda.

[3] *worms.*] Of which you may see the many strange and horrible shapes in *Parœus his Chirurgerye*, lib. xx, cap. iii et iv, pp. 762-4.—*Wr.*

For a story of the sort, see vol. i, p. 49.

[4] *on the bodies of women.*] Betweene the breasts of a woman, rolled in fine lawne, and they are stronger then those hatcht in the cases, how warme soever kept. But itt must bee by election in virgin's breasts, *antequam sororiant, aut menstrua patiantur, næ prorsus intereant, alioqui proditurœ felicitr.*—*Wr.*

The occasion of this conceit might be an Egyptian tradition concerning the bird ibis, which after became transferred unto cocks. For an opinion it was of that nation, that the ibis[5] feeding upon serpents,[6] that venomous food so inquinated their oval conceptions or eggs within their bodies, that they sometimes came forth in serpentine shapes, and therefore they always brake their eggs, nor would they endure the bird to sit upon them. But how causeless their fear was herein, the daily incubation of ducks, pea-hens, and many other testify; and the stork might have informed them; which bird they honoured and cherished, to destroy their serpents.

That which much promoted it, was a misapprehension in Holy Scripture upon the Latin translation in Isa. li, *Ova aspidum ruperunt, et telas aranearum texuerunt, qui comedet de ovis eorum morietur, et quod confotum est, erumpet in regulum.* From whence, notwithstanding, beside the generation of serpents from eggs, there can be nothing concluded; and what kind of serpents are meant, not easy to be determined; for translations are very different: Tremellius rendering the asp *hæmorrhous*, and the regulus or basilisk, a viper; and our translation for the asp sets down a cockatrice in the text, and an adder in the margin.

Another place of Isaiah doth also seem to countenance it, chap. xiv: *Ne lætеris Philistæa, quoniam diminuta est virga percussoris tui; de radice enim colubri egredietur regulus, et semen ejus absorbens volucrem;* which ours somewhat favourably rendereth: "Out of the serpent's root shall come forth a cockatrice, and his fruit shall be a fiery flying serpent." But Tremellius, *è radice serpentis prodit hæmorrhous,*

[5] *ibis.*] Black ibis.—*Wr.*

[6] *serpents.*] Heer the learned author mistakes the story: for Tully, in the 2nd *De Natura Deorum* says, the Ægytians justly honored the ibis; *quia pestem ab Ægypto avertunt quum serpentes volucros, Africo è Libyâ advertos, interficiant.* Soe farr were they from breaking their eggs, which had been to destroy the breed of those whom they honored. And what madnes had it been to honor the stork that destroyed the serpents and to destroy the ibides' eggs, by which creature (and not by the storke) those fiery flying serpents were destroyed. But mistake grew for want of right advertisement herein. For St. Hierom, that wel knew Egypt, tels us there were 2 kinds of the ibides: one coale black, (and itt seemes pernicious some waye, and therefore hated by them,) the other not much unlike the stork, though not the same. Soe that in honoring the second kinde, they might seem to honor the stork, which was (indeed) the right ibis, their preserver.—*Wr.*

et fructus illius prester volans; wherein the words are different, but the sense is still the same; for therein are figuratively intended Uzziah and Ezechias; for though the Philistines had escaped the minor serpent, Uzziah, yet from his stock a fiercer snake should arise, that would more terribly sting them, and that was Ezechias.

But the greatest promotion it hath received from a misunderstanding of the hieroglyphical intention. For being conceived to be the lord and king of serpents, to awe all others, nor to be destroyed by any, the Egyptians hereby implied eternity, and the awful power of the supreme deity; and therefore described a crowned asp or basilisk upon the heads of their gods: as may be observed in the Bembine table,[7] and other Egyptian monuments.[8]

CHAPTER VIII.

That a Wolf, first seeing a man, begets a dumbness in him.

Such a story as the basilisk, is that of the wolf, concerning priority of vision, that a man becomes hoarse[9] or dumb, if a wolf have the advantage first to eye him. And this is in plain language affirmed by Pliny; *In Italia, ut creditur, luporum visus est noxius, vocemque homini, quem priùs contemplatur, adimere;* so is it made out what is delivered by Theocritus, and after him by Virgil:

> ——— Vox quoque Mœrim
> Jam fugit ipsa, lupi Mœrim videre priores.

And thus is the proverb to be understood, when, during the discourse, if the party or subject interveneth, and there

[7] *as may be observed, &c.*] This is from Pierius (141, B.) by whom a basilisk is figured from the Bembine, or Isiac table, as a serpent, with a crest, or crown, upon an obelisk, and having rudiments of wings and a long head and snout.

[8] *But, &c.*] This paragraph was first added in the 3rd edit.

[9] *that a man becomes hoarse.*] When any one becomes hoarse, the French say, *il a vu le loup.* See *Howell's Familiar Letters*, vol. iv, p. 52. See *Erasmi Colloquia, De Amicitiâ.—Jeff.*

Ross uses the *argumentum ad hominem* in this case: he says, "Dr. Browne did unadvisedly reckon this among his vulgar errors, for I believe he would find this no error, if he were suddenly surprised by a wolf, having no means to escape or save himself!"

ensueth a sudden silence, it is usually said, *lupus est in fabula.* Which conceit being already convicted, not only by Scaliger,[1] Riolanus, and others, but daily confutable almost every where out of England, we shall not further refute.

The ground, or occasional original hereof, was probably the amazement and sudden silence the unexpected appearance of wolves doth often put upon travellers; not by a supposed vapour, or venomous emanation, but a vehement fear, which naturally produceth obmutescence, and sometimes irrecoverable silence. Thus birds are silent in the presence of an hawk, and Pliny saith that dogs are mute in the shadow of an hyæna. But thus could not the mouths of worthy martyrs be silenced, who being exposed not only unto the eyes, but the merciless teeth of wolves, gave loud expressions of their faith, and their holy clamours[2] were heard as high as heaven.

That which much promoted it, beside the common proverb, was an expression in Theocritus, a very ancient poet, οὐ φθέγξῃ, Λύκον εἶδες, *Edere non poteris vocem, Lycus est tibi visus;* which Lycus was rival unto another, and suddenly appearing, stopped the mouth of his corrival. Now Lycus signifying also a wolf occasioned this apprehension; men taking that appellatively which was to be understood properly, and translating the genuine acception: which is a fallacy of equivocation, and in some opinions begat the like conceit concerning Romulus and Remus, that they were fostered by a wolf—the name of the nurse being Lupa—and founded the fable of Europa, and her carriage over the sea by a bull, because the ship or pilot's name was Taurus. And thus have some been startled at the proverb, *bos in lingua,* confusedly apprehending how a man should be said to have an ox in his tongue, that would not speak his mind; which

1 *Scaliger.*] *Exercitatione* 344.—*Wr.*

2 *clamours.*] Shouts. Clamours is improper here, for 't was not feare of death that made them cry out at all; but an assured certainty of their neer approaching glorification made them kiss their persequutors, as promoters to eternity, and to sing in the midst of their torments aloud! Soe that, instead of "clamours," I put "shouts," wherewith they daunted those wolves, and made them stand amazed at their courage; which they concluded must needs proceed from the hope of something after death, to bee farr better then the present life, and by this meanes were many of them converted. —*Wr.*

was no more than that a piece of money had silenced him; for by the ox was only implied a piece of coin stamped with that figure, first current with the Athenians, and after among the Romans.[3]

CHAPTER IX.

Of the long life of the Deer.

THE common opinion concerning the long life of animals is very ancient, especially of crows, choughs, and deer, in moderate accounts exceeding the age of man, in some the days of Nestor, and in others surmounting the years of Artephius or Methuselah. From whence antiquity hath raised proverbial expressions, and the real conception of their duration hath been the hyperbolical expression of many others. From all the rest we shall single out the deer, upon concession a long-lived animal, and in longevity by many conceived to attain unto hundreds; wherein, permitting every man his own belief, we shall ourselves crave liberty to doubt, and our reasons are these ensuing.

The first is that of Aristotle, drawn from the increment and gestation of this animal, that is, its sudden arrivance unto growth and maturity, and the small time of its remainder in the womb. His words in the translation of Scaliger are these —*De ejus vitæ longitudine fabulantur; neque enim aut gestatio aut incrementum hinnulorum ejusmodi sunt, ut præstent argumentum longævi animalis;* that is, "fables are raised concerning the vivacity [4] of deer, for neither are their gestation or increment such as may afford an argument of long life." And these, saith Scaliger, are good mediums conjunctively taken, that is, not one without the other. For of animals viviparous, such as live long go long with young, and attain but slowly to their maturity and stature. So the horse, that

[3] *first current with the Athenians, &c.*] Wherewith the embassadors stopt Demosthenes his mouth, that hee should not inveigh against their countrye.—*Wr.*

[4] *vivacity.*] i. e. long life. The passage is from the *Hist. Animal.* lib. VI, c. XXIX.

liveth about thirty, arriveth unto his stature about six years, and remaineth about ten months in the womb,—so the camel, that liveth unto fifty, goeth with young no less than ten months, and ceaseth not to grow before seven,—and so the elephant, that liveth an hundred, beareth its young above a year,[5] and arriveth unto perfection at twenty. On the contrary, the sheep and goat, which live but eight or ten years, go but five months,[6] and attain to their perfection at two years: and the like proportion is observable in cats, hares, and conies. And so the deer, that endureth the womb but eight months, and is complete at six years, from the course of nature we cannot expect to live an hundred, nor in any proportional allowance much more than thirty. As having already passed two general motions observable in all animations, that is, its beginning and increase, and having but two more to run through, that is, its state and declination, which are proportionally set out by nature in every kind, and naturally proceeding admit of inference from each other.

The other ground that brings its long life into question, is the immoderate felicity, and almost unparalleled excess of venery, which every September may be observed in this animal, and is supposed to shorten the lives of cocks, partridges, and sparrows. Certainly a confessed and undeniable enemy unto longevity, and that not only as a sign in the complexional desire and impetuosity, but also as a cause in the frequent act, or iterated performance thereof. For though we consent not with that philosopher, who thinks a spermatical emission, unto the weight of one drachm, is equivalent unto the effusion of sixty ounces of blood, yet considering the exolution and languor ensuing that act in some—the extenuation and marcour in others, and the visible acceleration it maketh of age in most, we cannot but think it much abridgeth our days. Although we also concede that this exclusion is natural, that

[5] *above a year.*] The periods here assigned to the horse, camel, and elephant, are all shorter than the fact. That of the horse is twelve months, the camel eleven and a half, and the elephant twenty.

[6] *five months.*] The 1st of August was (of old) cal'd Lammas day, bycause the rams, going then to the flocks, made the fall of the lambs alwayes about the nativitye; the 19th of December terminating the full time of gestation, i. e. five months, or twenty weeks.—*Wr.*

nature itself will find a way hereto without either act or object; and although it be placed among the six non-naturals, that is, such as, neither naturally constitutive, nor merely destructive, do preserve or destroy according unto circumstance; yet do we sensibly observe an impotency, or total privation thereof, prolongeth life; and they live longest in every kind that exercise it not at all. And this is true, not only in eunuchs by nature, but spadoes by art; for castrated animals, in every species, are longer lived than they which retain their virilities; for the generation of bodies is not merely effected, as some conceive of souls, that is, by irradiation, or answerably unto the propagation of light, without its proper diminution; but therein a transmission is made materially from some parts, with the idea of every one; and the propagation of one is, in a strict acception, some minoration of another. And therefore, also, that axiom in philosophy, that the generation of one thing is the corruption of another, although it be substantially true concerning the form and matter, is also dispositively verified in the efficient or producer.

As for more sensible arguments, and such as relate unto experiment, from these we have also reason to doubt its age, and presumed vivacity; for where long life is natural, the marks of age are late; and when they appear, the journey unto death cannot be long. Now the age of the deer, (as Aristotle long ago observed,) is best conjectured by view of the horns and teeth. From the horns there is a particular and annual account unto six years, they arising first plain, and so successively branching; after which the judgment of their years, by particular marks, becomes uncertain. But when they grow old, they grow less branched, and first do lose their ἀμυντῆρες, or *propugnacula*, that is, their brow-antlers, or lowest furcations next the head; which, Aristotle saith, the young ones use in fight, and the old, as needless, have them not at all. The same may be also collected from the loss of their teeth, whereof in old age they have few or none before in either jaw. Now these are infallible marks of age, and when they appear, we must confess a declination; which notwithstanding, (as men inform us in England, where

observations may well be made,) will happen between twenty and thirty. As for the bone, or rather induration of the roots of the arterial vein and great artery, which is thought to be found only in the heart of an old deer, and therefore becomes more precious in its rarity, it is often found in deer much under thirty, and we have known some affirm they have found it in one of half that age. And therefore, in that account of Pliny, of a deer with a collar about his neck, put on by Alexander the Great, and taken alive an hundred years after, with other relations of this nature, we much suspect imposture or mistake. And if we grant their verity, they are but single relations, and very rare contingencies in individuals, not affording a regular deduction upon the species. For though Ulysses' dog lived unto twenty, and the Athenian mule unto fourscore, yet do we not measure their days by those years, or usually say they live thus long. Nor can the three hundred years of John of times, or Nestor, overthrow the assertion of Moses,* or afford a reasonable encouragement beyond his septuagenary determination.

The ground and authority of this conceit was first hieroglyphical, the Egyptians expressing longevity by this animal;[7] but upon what uncertainties, and also convincible falsities they often erected such emblems, we have elsewhere delivered. And if that were true which Aristotle† delivers of his time, and Pliny was not afraid to take up long after, the Egyptians could make but weak observations herein: for though it be said that Æneas feasted his followers with venison, yet Aristotle affirms that neither deer nor boar were to be found in Africa. And how far they miscounted the lives and duration of animals, is evident from their conceit of the crow, which they presume to live five hundred years; and from the lives of hawks, which (as Ælian delivereth) the Egyptians do reckon no less than at seven hundred.

* Psalm xc.

† *Histor. Animal. lib.* viii.

[7] *was first hieroglyphical, &c.*] Obtained from Horapollo. The *antelope* is mentioned by Dr. Young, with the *bullock*, the *ram*, and the *tortoise*, as being sometimes representations of the things which they resemble, and sometimes having probably, a metaphorical sense. (*S. E. B. Egypt*, 75-78.) Champollion mentions the gazelle, but not the deer.

The second, which led the conceit unto the Grecians, and probably descended from the Egyptians, was poetical; and that was a passage of Hesiod, thus rendered by Ausonius.

> Ter binos deciésque novem super exit in annos,
> Justa senescentûm quos implet vita virorum.
> Hos novies superat vivendo garrula cornix,
> Et quater egreditur cornicis sæcula cervus,
> Alipedem cervum ter vincit corvus.
>
> To ninety-six the life of man ascendeth,
> Nine times as long that of the chough extendeth,
> Four times beyond the life of deer doth go,
> And thrice is that surpassed by the crow.

So that, according to this account, allowing ninety-six for the age of man, the life of a deer amounts unto three thousand four hundred and fifty-six: a conceit so hard to be made out, that many have deserted the common and literal construction. So Theon, in Aratus, would have the number of nine not taken strictly, but for many years. In other opinions, the compute so far exceedeth the truth, that they have thought it more probable to take the word *genea*, that is, a generation consisting of many years, but for one year, or a single revolution of the sun; which is the remarkable measure of time, and within the compass whereof, we receive our perfection in the womb. So that by this construction, the years of a deer should be but thirty-six, as is discoursed at large in that tract of Plutarch, concerning the cessation of oracles, and whereto in his discourse of the crow, Aldrovandus also inclineth. Others, not able to make it out, have rejected the whole account, as may be observed from the words of Pliny; *Hesiodus qui primus aliquid de longævitate vitæ prodidit, fabulosè (reor) multa de hominum ævo referens, cornici novem nostras attribuit ætates, quadruplum ejus cervis, id triplicatum corvis, et reliqua fabulosiùs de phœnice et nymphis.* And this, how slender soever, was probably the strongest ground antiquity had for this longevity of animals; that made Theophrastus expostulate with nature concerning the long life of crows; that begat that epithet of deer * in Oppianus, and that expression of Juvenal,

> ——— Longa et cervina senectus.

* Τετρακόρωνος.

The third ground was philosophical, and founded upon a probable reason in nature, that is, the defect of a gall: which part (in the opinion of Aristotle and Pliny,) this animal wanted, and was conceived a cause and reason of their long life: according (say they) as it happeneth unto some few men, who have not this part at all. But this assertion is first defective in the verity concerning the animal alleged: for though it be true, a deer hath no gall in the liver like many other animals, yet hath it that part in the guts, as is discoverable by taste and colour: and therefore Pliny doth well correct himself, when, having affirmed before, it had no gall, he after saith, some hold it to be in the guts; and that for their bitterness, dogs will refuse to eat them. The assertion is also deficient in the verity of the induction or connumeration of other animals conjoined herewith, as having also no gall; that is, as Pliny accounteth, *equi, muli,* &c. Horses, mules, asses, deer, goats, boars, camels, dolphins, have no gall. In dolphins and porpoises I confess I could find no gall. But concerning horses, what truth there is herein we have declared before; as for goats we find not them without it; what gall the camel hath, Aristotle declareth: that hogs also have it we can affirm; and that not in any obscure place, but in the liver, even as it is seated in man.[8]

That, therefore, the deer is no short-lived animal, we will acknowledge; that comparatively, and in some sense long-lived, we will concede; and thus much we shall grant, if we commonly account its days[9] by thirty-six or forty;[1] for thereby it will exceed all other cornigerous animals. But that it attaineth unto hundreds, or the years delivered by authors, since we have no authentic experience for it—since we have reason and common experience against it—since the

[8] *Horses, &c.*] This statement is correct. It is asserted that the gall-bladder is common to all carnivorous animals possessing a liver, and that it seems to be wanting only in those which feed on vegetables alone. The gall-bladder is contained between the *peritonæum* and the liver.

[9] *days.*] Yeares.—*Wr.*

[1] *thirty-six or forty.*] A correct conclusion. Ross, however, is not inclined to give up the opinion of the "ancient sages," on "so weak grounds" as those advanced by Sir Thomas. His faith, however, might well admit such assertions as are here discussed; since he avowed his belief that old men may grow young again;—"that the decayed nature may be so renewed and repaired, as an old man may perform the function of a young man!"

grounds are false and fabulous which do establish it, we know no ground to assent.

Concerning deer, there also passeth another opinion, that the males thereof do yearly lose their pizzle: for men, observing the decidence of their horns, do fall upon the like conceit of this part, that it annually rotteth away, and successively reneweth again.[2] Now the ground hereof, was surely the observation of this part in deer after immoderate venery, and about the end of their rut, which sometimes becomes so relaxed and pendulous, it cannot be quite retracted: and being often beset with flies, it is conceived to rot, and at last to fall from the body. But herein experience will contradict us; for deer, which either die or are killed at that time, or any other, are always found to have that part entire. And reason will also correct us; for spermatical parts, or such as are framed from the seminal principles of parents,[3] although homogeneous or similary, will not admit a regeneration; much less will they receive an integral restoration, which being organical and instrumental members, consist of many of those. Now this part, or animal of Plato, containeth not only sanguineous and reparable particles, but is made up of veins, nerves, arteries, and in some animals of bones;[4] whose reparation is beyond its own fertility, and a fruit not to be expected from the fructifying part itself. Which faculty, were it communicated unto animals whose originals are double, as well as unto plants whose seed is within themselves, we might abate the art of *Taliacotius*, and the new inarching of noses.[5]

[2] *this part, &c.*] Itt may sometimes rott, as the deers often doe; yf a sharpe and stervinge winter take them before they can repaire the strength lost by immoderate rutt: whence it seemes the terme (rott) first came: but that part wherein the rott always beginnes to appeare, is never renewed.—*Wr.*

[3] *such as are framed, &c.*] There seems some difficulty in determining the precise meaning of this phrase;—but Sir Thomas was not aware of what has been ascertained by the experiments of Bonnet and Spallanzani on snails and worms; and by those of Drs. Heineken and Macculloch on spiders and crabs; viz. that these comparatively imperfect animals have the wonderful power (not bestowed on those of far more complete organization) of reproducing parts of which they have been deprived—limbs, antennæ, and even the head.

[4] *bones.*] As in poll-cats and ferrets, which I caused to bee dissected, and found in one a bone as big as a walnut shaled.—*Wr.*

[5] *new inarching of noses.*] In the *Gents. Mag.* vol. 54, p. 891, is an account of this operation as performed in India, in 1792. An old work, entitled *Chirurgorum Comes*, 1687, concludes with an account of a similar operation, performed two hundred before, at Lausanne, by a surgeon named Greffonius, on a

And therefore the fancies of poets have been so modest, as not to set down such renovations, even from the powers of their deities; for the mutilated shoulder of Pelops[6] was pieced out with ivory, and that the limbs of Hippolytus were set together, not regenerated by Æsculapius, is the utmost assertion of poetry.

CHAPTER X.

That a Kingfisher, hanged by the bill, sheweth where the wind lay.

THAT a kingfisher, hanged by the bill, sheweth in what quarter the wind is, by an occult and secret propriety, converting the breast to that point of the horizon from whence the wind doth blow, is a received opinion, and very strange—introducing natural weather-cocks, and extending magnetical positions as far as animal natures. A conceit supported chiefly by present practice, yet not made out by reason or experience.

Unto reason it seemeth very repugnant, that a carcass or body disanimated, should be so affected with every wind, as to carry a conformable respect and constant habitude thereto. For although in sundry animals we deny not a kind of natural meteorology or innate presention both of wind and weather, yet, that proceeding from sense receiving impression from the first mutation of the air, they cannot in reason retain that apprehension after death, as being affections which depend on life, and depart upon disanimation. And therefore with more favourable reason may we draw the same effect or sympathy upon the hedge-hog, whose presention of winds is so exact, that it stoppeth the north or southern hole of its nest,

young woman. The physiological principles, on which this celebrated process has been successful, are discussed by Dr. Bostock, in his *Elementary System of Physiology*, vol. i, p. 450. Sir Kenelm Digby adds this marvellous assertion, that when a man, whose nose had been lost by extreme cold, was supplied with an artificial nose made of the flesh of some other person, "his new nose would putrify as soon as the person, out of whose substance it was taken, came to die!"

6 *Pelops.*] So Virgil;—Georgic. iii, 7:

Huneroque Pelops insignis eburno.

according to the prenotion of these winds ensuing;[7] which some men observing, have been able to make predictions which way the wind would turn, and been esteemed hereby wise men in point of weather. Now this proceeding from sense in the creature alive, it were not reasonable to hang up an hedge-hog dead, and to expect a conformable motion unto its living conversion. And though in sundry plants their virtues do live after death—and we know that scammony, rhubarb, and senna will purge without any vital assistance—yet in animals and sensible creatures, many actions are mixed, and depend upon their living form, as well as that of mistion; and though they wholly seem to retain unto the body, depart upon disunion. Thus glow-worms alive project a lustre in the dark; which fulgour, notwithstanding, ceaseth after death; and thus the torpedo, which being alive stupifies at a distance, applied after death, produceth no such effect; which had they retained, in places where they abound they might have supplied opium,[8] and served as frontals in phrensies.

As for the experiment, we cannot make it out by any we have attempted; for if a single kingfisher be hanged up with untwisted silk in an open room, and where the air is free, it observes not a constant respect unto the mouth of the wind, but, variously converting, doth seldom breast it aright. If two be suspended in the same room, they will not regularly conform their breasts, but oftimes respect the opposite points of heaven. And if we conceive that, for exact exploration, they should be suspended where the air is quiet and unmoved,—that, clear of impediments, they may more freely convert upon their natural verticity,—we have also made this way of inquisition, suspending them in large and capacious glasses closely stopped; wherein nevertheless we observed a casual station, and that they rested irregularly upon conversion: wheresoever they rested, remaining inconverted; and possessing one point of the compass, whilst the wind, perhaps, had passed the two and thirty.

[7] *whose presention of winds, &c.*] The popular belief of this "presention," (faculty of perceiving before-hand,) in the hedgehog, seems to be without foundation.

[8] *opium.*] This term, used before (page 417) to express the stupifying effect of the gymnotic electricity, is, of course, employed figuratively.

The ground of this popular practice might be the common opinion concerning the virtue prognostick of these birds; as also the natural regard they have unto the winds, and they unto them again; more especially remarkable in the time of their nidulation and bringing forth their young. For at that time, which happeneth about the brumal solstice, it hath been observed, even unto a proverb,[9] that the sea is calm, and the winds do cease, till the young ones are excluded, and forsake their nest; which floateth upon the sea, and by the roughness of winds, might otherwise be overwhelmed. But how far hereby to magnify their prediction we have no certain rule; for whether out of any particular prenotion they choose to sit at this time, or whether it be thus contrived by concurrence of causes and providence of nature, securing every species in their production, is not yet determined.[1] Surely many things fall out by the design of the general motor and undreamt-of contrivance of nature, which are not imputable unto the intention or knowledge of the particular actor. So, though the seminality of ivy be almost in every earth, yet that it ariseth and groweth not, but where it may be supported;[2] we cannot ascribe the same unto the distinction of the seed, or conceive any science therein which suspends and conditionates its eruption. So if, as Pliny and Plutarch report, the crocodiles of Egypt so aptly lay their eggs, that the natives thereby are able to know how high the flood will attain, it will be hard to make out how they should divine the extent of the inundation, depending on causes so many miles remote; that is, the measure of showers in Ethiopia; and whereof, as Athanasius in the *Life of Anthony* delivers, the devil himself upon demand could make no clear prediction. So are there likewise many things in nature

[9] *proverb.*] Halcionian dayes, i.e. dayes of peace.—*Wr.*

[1] *not yet determined.*] All creatures know not only the meanes but the times of their preservation: and therefore that the halcyon knowing that at the winter solstice there is such a calm, chooseth that time to hatch his young, as the crowes did in 1652, when the mildnes of January was such, that they, supposing the spring was come on, did build their nests, and as I was credibly informed, some did hatche their broode.—*Wr.*

[2] *groweth not, but, &c.*] The ground affords a sufficient support for the purpose; for ivy will certainly grow where it has no other, and will cover the surface of the ground, growing among the herbage, and in some cases supplanting it.

which are the forerunners or signs of future effects,[3] whereto they neither concur in causality or prenotion, but are secretly ordered by the providence of causes and concurrence of actions collateral to their signations.

It was also a custom of old to keep these birds in chests, upon opinion that they prevented moths. Whether it were not first hanged up in rooms, to such effects, is not beyond all doubt; or whether we mistake not the posture of suspension, hanging it by the bill, whereas we should do it by the back, that by the bill it might point out the quarters of the wind; for so hath Kircherus described the orbis and the sea-swallow. But the eldest custom of hanging up these birds was founded upon a tradition, that they would renew their feathers every year as though they were alive: in expectation whereof, four hundred years ago, Albertus Magnus was deceived.[4]

CHAPTER XI.

Of Griffins.

THAT there are griffins in nature, that is, a mixed and dubious animal, in the forepart resembling an eagle, and behind the shape of a lion, with erected ears, four feet, and a long tail, many affirm, and most, I perceive, deny not.[5] The same is averred by Ælian, Solinus, Mela, and Herodotus—countenanced by the name sometimes found in Scripture, and was an hieroglyphic of the Egyptians.[6]

Notwithstanding we find most diligent enquirers to be of a contrary assertion. For beside that Albertus and Pliny have disallowed it, the learned Aldrovandus hath, in a large dis-

[3] *So are there, &c.*] See an interesting chapter on prognostics, in *Forster's Researches into Atmospheric Phænomena*, p. 128.

[4] *It was a custom, &c.*] First added in the 2nd edition.

[5] *That there are griffins, &c.*] Ross, as usual, defends the ancient opinion, at considerable length; and accounts for their not being now known to exist, by supposing them to have removed to places inaccessible to men, whereof he observes there are many such in the great and vast countries of Scythia, &c. &c.!—*Arcana*, p. 199.

[6] *and was an hieroglyphic, &c.*] Pierius, (p. 233. E.) on the authority of the Isiac table; of which see note 1, at page 415.

course rejected it; Matthias Michovius, who writ of those northern parts wherein men place these griffins, hath positively concluded against it; and, if examined by the doctrine of animals, the invention is monstrous, nor much inferior unto the figment of sphynx, chimæra, and harpies; for though there be some flying animals of mixed and participating natures,[7] that is, between bird and quadruped, yet are their wings and legs so set together, that they seem to make each other, there being a commixtion of both, rather than an adaptation or cement of prominent parts unto each other; as is observable in the bat, whose wings and fore-legs are contrived in each other. For though some species there be of middle and participating natures, that is, of bird and beast, as bats and some few others; yet are their parts so conformed and set together, that we cannot define the beginning or end of either; there being a commixtion of both in the whole, rather than an adaptation or cement of the one unto the other.

Now for the word γρὺψ or *gryps*, sometimes mentioned in Scripture, and frequently in human authors, properly understood it signifies some kind of eagle or vulture, from whence the epithet *grypus*, for an hooked or aquiline nose. Thus when the Septuagint makes use of this word,* Tremellius, and our translation, hath rendered it the ossifrage, which is one kind of eagle. And although the vulgar translation, and that annexed unto the Septuagint, retain the word *gryps*, which in ordinary and school construction is commonly rendered a griffin, yet cannot the Latin assume any other sense than the Greek, from whence it is borrowed. And though

* Lev. ii.

[7] *of mixed and participating natures.*] Modern discovery has greatly added to our knowledge of those animals which form connecting links in the great chain. "There is nothing more wonderful and admirable in nature than this sort of connection between the classes, orders, groups, and genera, of the animal kingdom. It is not a regular gradation of being, like the steps of a ladder, according to the Platonic system, nor do we think that it can be very easily reduced to any definite plan, notwithstanding the very ingenious and laudable attempts, in this way, of some recent naturalists. But we find in every class, and every order of animals, connecting links with all the other classes, and all the other orders. Somewhere or other, we are sure to find the existing bond of affinity. Thus we have flying mammalia, and walking birds —swimming birds, and flying fishes—in short, some out of each borrow the characters of others, and lose some of those peculiar to their own division."—*Cuvier*, by Griffith, vol. ix, p. 284.

the Latin *gryphes* be altered somewhat by the addition of an *h*, or aspiration of the letter π, yet is not this unusual; so what the Greeks call τρόπαιον, the Latin will call *trophæum;* and that person, which in the gospel is named Κλέοπας, the Latins will render Cleophas. And therefore the quarrel of Origen was unjust, and his conception erroneous, when he conceived the food of griffins forbidden by the law of Moses;[8] that is, poetical animals, and things of no existence. And therefore, when in the hecatombs and mighty oblations of the Gentiles, it is delivered they sacrificed *gryphes* or griffins, hereby we may understand some stronger sort of eagles. And therefore also, when it is said in Virgil, of an improper match, or Mopsus marrying Nysa, *Jungentur jam gryphes equis*, we need not hunt after other sense, than that strange unions shall be made, and different natures be conjoined together.

As for the testimonies of ancient writers, they are but derivative, and terminate all in one Aristeus, a poet of Proconesus, who affirmed that near the Arimaspi, or one-eyed nation, griffins defended the mines of gold. But this, as Herodotus delivereth, he wrote by hear-say; and Michovius, who had expressly written of those parts, plainly affirmeth, there is neither gold nor griffins in that country, nor any such animal extant; for so doth he conclude, *Ego vero contra veteres authores, gryphes nec in illa septentrionis, nec in aliis orbis partibus inveniri affirmârim.*

Lastly, concerning the hieroglyphical authority, although it nearest approach the truth, it doth not infer its existency. The conceit of the griffin, properly taken, being but a symbolical fancy, in so intolerable a shape including allowable morality. So doth it well make out the properties of a guardian, or any person entrusted; the ears implying attention—the wings, celerity of execution—the lion-like shape, courage and audacity—the hooked bill, reservance and tenacity. It is also an emblem of valour and magnanimity, as being compounded of the eagle and lion, the noblest animals in their

[8] *Moses.*] The most learned among the Jews, can give us noe certaine information concerning the names of animals, plants, mettals, vestments, or instruments, saith Gesner, in his learned book, *De Quadrupedibus.*—*Wr.*

kinds; and so is it appliable unto princes, presidents, generals, and all heroic commanders; and so is it also borne in the coat-arms of many noble families of Europe.

But the original invention seems to be hieroglyphical, derived from the Egyptians, and of an higher signification; by the mystical conjunction of hawk and lion, implying either the genial or the syderous sun, the great celerity thereof, and the strength and vigour in its operations: and therefore, under such hieroglyphics Osyris was described;[9] and in ancient coins we meet with griffins conjointly with Apollo's *tripodes* and chariot wheels; and the marble griffins at St. Peter's in Rome, as learned men conjecture, were first translated from the temple of Apollo. Whether hereby were not also mystically implied the activity of the sun in Leo, the power of God in the sun, or the influence of the celestial Osyris, by Moptha, the genius of Nilus, might also be considered. And than the learned Kircherus, no man were likely to be a better Oedipus.[1]

CHAPTER XII.

Of the Phœnix.

THAT there is but one phœnix in the world, which after many hundred years burneth itself, and from the ashes thereof ariseth up another,[2] is a conceit not new or altogether popu-

[9] *by the mystical conjunction, &c.*] Most of the above statements are from Pierius: but he does not mention Osiris. Horapollo has no griffins. Plutarch says, that Osiris is typified by a hawk. *Young, ut sup.* 45. "The pictorial delineation of Osiris has indifferently a human head or that of a hawk; but never that of any other animals."—*Ib.* 57. Champollion mentions these, as "*quadrupèdes à tête d'oiseau.*"—*Precis du Système Hieroglyphique*, &c. 1828, p. 305.

[1] *But the original, &c.*] First added in the 3rd edition.

[2] *That there is but one phœnix, &c.*] It is really amusing to observe the humorous obstinacy of honest master Ross in defending every thing, however absurd, which is derived from "the ancient sages." That the phœnix is but rarely seen he thinks no marvel; its instinct teaching it to keep out of the way of man, the great tyrant of the creatures; —"for had Heliogabalus, that Roman glutton, met with him, he had devoured him, though there were no more in the world!"—*Arcana*, p. 202.

lar, but of great antiquity; not only delivered by human authors, but frequently expressed also by holy writers: by Cyril, Epiphanius and others; by Ambrose in his *Hexameron*, and Tertullian in his poem, *De Judicio Domini;* but more agreeably unto the present sense, in his excellent tract, *De Resurrectione Carnis; Illum dico alitem orientis peculiarem, de singularitate famosum, de posteritate monstruosum; qui semetipsum libenter funerans renovat, natali fine decedens, atque succedens iterum phœnix. Ubi jam nemo, iterum ipse; quia non jam, alius idem.* The Scripture also seems to favour it, particularly that of Job xxi. In the interpretation of Beda, *Dicebam, in nidulo meo moriar, et sicut phœnix multiplicabo dies:* and Psalm xxxi, δίκαιος ὡσεὶ φοῖνιξ ἀνθήσει, *vir justus ut phœnix florebit,* as Tertullian renders it, and so also expounds it in his book, before alleged.

All which notwithstanding, we cannot presume the existence of this animal, nor dare we affirm there is any phœnix in nature. For first, there wants herein the definitive confirmator and test of things uncertain, that is, the sense of man. For though many writers have much enlarged hereon, yet is there not any ocular describer, or such as presumeth to confirm it upon aspection. And therefore Herodotus, that led the story unto the Greeks, plainly saith, he never attained the sight of any, but only in the picture.

Again, primitive authors, and from whom the stream of relations is derivative, deliver themselves very dubiously; and, either by a doubtful parenthesis or a timorous conclusion, overthrow the whole relation. Thus Herodotus, in his *Euterpe*, delivering the story hereof, presently interposeth ἐμοὶ μὲν οὐ πίστα λέγοντες; that is, "which account seems to me improbable." Tacitus, in his *Annals*, affordeth a larger story, how the phœnix was first seen at Heliopolis, in the reign of Sesostris, then in the reign of Amasis, after in the days of Ptolemy, the third of the Macedonian race; but at last thus determineth, *sed antiquitas obscura, et nonnulli falsum esse hunc phœnicem neque Arabum è terris credidere.* Pliny makes yet a fairer story, that the phœnix flew into Egypt in the consulship of Quintus Plancius, that it was brought to Rome in the censorship of Claudius, in the eight hundredth year of the city, and

testified also in their records; but after all concludeth, *Sed quæ falsa nemo dubitabit*, as we read it in the fair and ancient impression of Brixa, as Aldrovandus hath quoted it, and it is found in the manuscript copy, as Dalechampius hath also noted.[3]

Moreover, such as have naturally discoursed hereon, have so diversely, contrarily, or contradictorily, delivered themselves, that no affirmative from thence can reasonably be deduced; for most have positively denied it, and they which affirm and believe it, assign this name unto many, and mistake two or three in one. So hath that bird been taken for the phœnix, which liveth in Arabia, and buildeth its nest with cinnamon; by Herodotus called *cinnamulgus*, and by Aristotle, *cinnamomus;* and as a fabulous conceit is censured by Scaliger. Some have conceived that bird to be the phœnix, which by a Persian name with the Greeks is called *rhyntace;* but how they make this good, we find occasion of doubt, whilst we read in the life of Artaxerxes, that this is a little bird brought often to their tables, and wherewith Parysatis cunningly poisoned the queen. The *manucodiata*, or bird of paradise, hath had the honour of this name, and their feathers, brought from the Moluccas, do pass for those of the phœnix. Which, though promoted by rarity with us, the eastern travellers will hardly admit; who know they are common in those parts, and the ordinary plume of Janizaries among the Turks. And lastly, the bird *semenda* hath found the same appellation, for so hath Scaliger observed and refuted: nor will the solitude of the phœnix allow this denomination, for many there are of that species, and whose trifistulary bill and crany we have beheld ourselves. Nor are men only at variance in regard of the phœnix itself, but very disagreeing in the accidents ascribed thereto; for some affirm it liveth three hundred, some five, others six, some a thousand, others, no less than fifteen hundred years; some say it liveth in Æthiopia, others, in Arabia, some in Egypt, others, in India, and some in *Utopia*,—for such a one must that be which is described by Lactantius; that is, which neither was

[3] *as we read, &c.*] First added in 3rd edition.

singed in the combustion of Phaeton, nor overwhelmed by the inundation of Deucalion.[4]

Lastly, many authors, who have discoursed hereof, have so delivered themselves, and with such intentions, that we cannot from thence deduce a confirmation. For some have written poetically, as Ovid, Mantuan, Lactantius, Claudian, and others. Some have written mystically, as Paracelsus in his book, *De Azoth*, or *De Ligno et Linea Vitæ;* and as several hermetical philosophers, involving therein the secret of their elixir, and enigmatically expressing the nature of their great work. Some have written rhetorically and concessively, not controverting, but assuming the question, which taken as granted advantaged the illation. So have holy men made use hereof as far as thereby to confirm the resurrection; for discoursing with heathens, who granted the story of the phœnix, they induced the resurrection from principles of their own, and positions received among themselves. Others have spoken emblematically and hieroglyphically; and so did the Egyptians, unto whom the phœnix was the hieroglyphic of the sun.[5] And this was probably the ground of the whole relation; succeeding ages adding fabulous accounts, which laid together built up this singularity, which every pen proclaimeth.

As for the texts of Scripture which seem to confirm the conceit, duly perpended they add not thereunto. For whereas, in that of Job, according to the Septuagint or Greek translation, we find the word phœnix, yet can it have no animal signification; for therein it is not expressed φοῖνιξ, but στέλεχος φοίνικος, the trunk of the palm-tree, which is also called phœnix, and therefore the construction will be very hard, if not applied unto some vegetable nature. Nor can we safely insist upon the Greek expression at all; for though the vulgar translates it *palma*, and some retain the word phœnix, others do render it by a word of a different sense; for so hath Tre-

[4] *the combustion of Phaeton, &c.*] The combustion of Phaeton was but in Italy only, and Deucalion's flood only in Attick: both farr inoughe from Arabia or Ægypt: soe that the phœnix, yf any were, might live secure inoughe from those 2 mischeefs.—*Wr.*

[5] *have spoken, &c.*] From Pierius, whose authority is Pliny, (lib. x, c. ii;) but Pliny does not allude to the *hieroglyphic*. It is also adduced from Horapollo, 49, 111.

mellius delivered it; *Dicebam quòd apud nidum meum expirabo, et sicut arena multiplicabo dies;* so hath the Geneva and ours translated it, "I said I shall die in my nest, and shall multiply my days as the sand." As for that in the book of Psalms, *Vir justus ut phœnix*[6] *florebit,* as Epiphanius and Tertullian render it, it was only a mistake upon the homonymy * of the Greek word, phœnix, which signifies also a palm-tree. Which is a fallacy of equivocation, from a community in name inferring a common nature, and whereby we may as firmly conclude, that *diaphœnicon,* a purging electuary, hath some part of the phœnix for its ingredient; which receiveth that name from dates, or the fruit of the palm-tree, from whence, as Pliny delivers, the phœnix had its name.[7]

Nor do we only arraign the existence of this animal, but many things are questionable which are ascribed thereto, especially its unity, long life, and generation. As for its unity, or conceit there should be but one in nature, it seemeth not only repugnant unto philosophy, but also Holy Scripture; which plainly affirms, there went of every sort, two at least into the ark of Noah, according to the text, "Every fowl after his kind, every bird of every sort, they went into the ark, two and two of all flesh, wherein there is the breath of life; and they that went in, went in both male and female of all flesh." † It infringeth the benediction of God concerning multiplication. God blessed them, saying, "Be fruitful and multiply, and fill the waters in the seas, and let fowl multiply in the earth:" ‡ and again, "Bring forth with thee every living thing, that they may breed abundantly in the earth, and be fruitful and multiply upon the earth;" § which terms are not appliable unto the phœnix, whereof there is but one in the world, and no more now living than at the first benediction. For, the production of one being the destruction of another, although they produce and generate, they increase not, and must not be said to multiply, who do not transcend an unity.

* Consent of names. † Gen. vii. ‡ Gen. i. § Gen. viii.

[6] *ut phœnix.*] i. e. ut palma.— *Wr.*

[7] *its name.*] *Phœnix dactylifera,* the date-palm.

As for longevity, that it liveth a thousand years or more; beside that from imperfect observations and rarity of appearance, no confirmation can be made, there may be probably a mistake in the compute. For the tradition being very ancient and probably Egyptian, the Greeks, who dispersed the fable, might sum up the account by their own numeration of years; whereas the conceit might have its original in times of shorter compute. For if we suppose our present calculation, the phœnix now in nature will be the sixth from the creation, but in the middle of its years; and, if the rabbins' prophecy* succeed, shall conclude its days, not in its own, but the last and general flames, without all hope of reviviction.

Concerning its generation, that without all conjunction it begets and reseminates itself, hereby we introduce a vegetable production in animals, and unto sensible natures transfer the propriety of plants; that is, to multiply within themselves, according to the law of the creation, "Let the earth bring forth grass, the herb yielding seed, and the tree yielding fruit, whose seed is in itself."† Which is indeed the natural way of plants, who, having no distinction of sex, and the power of the species contained in every *individuum*, beget and propagate themselves without commixtion;[8] and therefore, the fruits, proceeding from simpler roots, are not so unlike or distinguishable from each other as are the offsprings of sensible creatures and prolifications descending from double originals. But animal generation is accomplished by more, and the concurrence of two sexes is required to the constitution of one.[9] And therefore such as have no distinction of sex, engender not at all, as Aristotle conceives of eels[1]

* That the world should last but six thousand years. † Gen. i.

8 *having no distinction of sex, &c.*] In correction of this assertion, see note 1, p. 360.

9 *But animal generation, &c.*] Sir Everard Home first suspected, and then proved, that in a particular tribe of fishes, comprising the lamprey, the organs of both sexes are present in the same individual.—See *Phil. Trans.* 1815, part ii, p. 266.

1 *eels.*] Aristotel's conceyte of eeles was not unlike that other of his, of the galaxia and of comets, whereof the knowlege then was small. But in the end of April, 1654, and after some firce storms, which they say make eeles wander, a large one was brought, out of which wee tooke neer (50) young eeles alive, each above 1 inche and a halfe long, of the bignes of a bristle, which moved as quick as the old one. From whence it appeares manifestly that they doe engender and become viviparous, contrary to the opinion of the world hitherto. Soe that now wee may conclude that the eele, as well as the viper, is vermiparous and

and testaceous animals.[2] And though plant-animals do multiply, they do it not by copulation, but in a way analogous unto plants. So hermaphrodites, although they include the parts of both sexes, and may be sufficiently potent in either, yet unto a conception require a separated sex, and cannot impregnate themselves. And so also, though Adam included all human nature, or was (as some opinion) an hermaphrodite, yet had he no power to propagate himself; and therefore God said, "It is not good that man should be alone, let us make him an help meet for him;" that is, an help unto generation; for, as for any other help, it had been fitter to have made another man.

Now, whereas some affirm that from one phœnix there doth not immediately proceed another, but the first corrupteth into a worm, which after becometh a phœnix, it will not make probable this production. For hereby they confound the generation of perfect animals with imperfect—sanguineous with exsanguineous—vermiparous with oviparous; and erect anomalies, disturbing the laws of nature. Nor will this corruptive production be easily made out in most imperfect generations; for although we deny not that many animals are vermiparous, begetting themselves at a distance, and as it were at the second-hand (as generally insects, and more remarkably butterflies and silkworms) yet proceeds not this generation from a corruption of themselves, but rather a specifical and seminal diffusion, retaining still the idea of themselves, though it act that part awhile in other shapes. And this will also hold in generations equivocal, and such as are not begotten from parents like themselves; so from frogs corrupting, proceed not frogs again; so if there be anatife-

viviparous, and not only (as the *natrix*) oviparous. And in the Severne they finde clots of young lampreys, which they call elvers, a finger's length, white, as big as a wheete straw, 40 or more in a cluster, which I have found of a very pleasant taste, and are accompted daintyes. That which deceaved the world hitherto was, that the brood of the eele comes to life sooner then the spawne of any fish, bycause, being never severed from the *matrix*, till itt have life, itt is of soden growth, in which time the damm never ranges, and as soon as they are formed, are layd in bankes, or beds of mud, undiscernable.—*Wr.*

[2] *testaceous animals.*] They present examples of all the modes of generation. Several of them possess the faculty of self-impregnation; others, although hermaphrodites, have need of a reciprocal intercourse. Many have the sexes separated. Some are oviparous, others viviparous.—*Griffith's Cuvier*, vol. xii, p. 4.

rous trees,[3] whose corruption breaks forth into bernacles, yet if they corrupt, they degenerate into maggots, which produce not them again. For this were a confusion of corruptive and seminal production, and a frustration of that seminal power committed to animals at the creation. The problem might have been spared, "Why we love not our lice as well as our children?" Noah's ark had been needless, the graves of animals would be the fruitfullest womb; for death would not destroy, but empeople the world again.

Since, therefore, we have so slender grounds to confirm the existence of the phœnix—since there is no ocular witness of it—since, as we have declared, by authors from whom the story is derived, it stands rather rejected—since they who have seriously discoursed hereof have delivered themselves negatively, diversely, or contrarily—since many others cannot be drawn into the argument as writing poetically, rhetorically, enigmatically, hieroglyphically—since Holy Scripture alleged for it, duly perpended, doth not advantage it;—and lastly, since so strange a generation, unity and long life, hath neither experience nor reason to confirm,—how far to rely on this tradition we refer unto consideration.

But surely they were not well-wishers unto parable[4] physic, or remedies easily acquired, who derived medicines from the phœnix, as some have done, and are justly condemned by Pliny; *Irridere est, vitæ remedia post millesimum annum reditura monstrare;* "It is a folly to find out remedies that are not recoverable under a thousand years," or propose the prolonging of life by that which the twentieth generation may never behold. More veniable is a dependence upon the philosopher's stone, potable gold, or any of those *arcanas* whereby Paracelsus, that died himself at forty-seven, gloried that he could make other men immortal.[5] Which, although extremely difficult, and *tantum non* infesible, yet are they not

[3] *if there be, &c.*] See note at end of book iii.

[4] *parable.*] Easily obtained;—*parabiles.*

[5] *Paracelsus, &c.*] This is noe wonder in them that convert soules; but to make bodyes immortall argues him either of folly or falsehood, that yf he could, would not make demonstration upon himselfe of such an admirable skill, as would have advanced him to sitt next the greatest monarchs of the world. But itt seemes that bragg descended from him to all his disciples (the chymicks) among whom, scarce one of a 1000, but dyes a beggar. —*Wr.*

impossible, nor do they (rightly understood) impose any violence on nature. And therefore, if strictly taken for the phœnix, very strange[6] is that which is delivered by Plutarch,* that the brain thereof is a pleasant bit, but that it causeth the headache. Which, notwithstanding, the luxurious emperor† could never taste, though he had at his table many a phœnicopterus, yet had he not one phœnix; for though he expected and attempted it, we read not in Lampridius that he performed it; and, considering the unity thereof, it was a vain design, that is, to destroy any species, or mutilate the great accomplishment of six days. And although some conceive—and it may seem true that there is in man a natural possibility to destroy the world in one generation; that is, by a general conspiracy to know no woman themselves, and disable all others also,—yet will this never be effected. And therefore Cain, after he had killed Abel, were there no other woman living, could not have also destroyed Eve: which, although he had a natural power to effect, yet the execution thereof the providence of God would have resisted; for that would have imposed another creation upon him, and to have animated a second rib of Adam.

* *De Sanitate Tuenda.* † *Heliogabalus.*

[6] *and therefore, &c.*] Itt seeems the learned man was staggerd at Plutarch's assertion, by mistakinge the worde φοίνιξ, which there signifies the *palm-tree*, (not the bird soe much talkt off, but never seene as yet.) Now itt is this φοίνιξ, or palm-tree, whereof Plutarch speakes, whose fruite (sayth hee) is sweet, but breeds headach, which is most true of the dates, which they call dactylos: the Greekes cald it ἐγκέφαλον, and the Latines *cerebrum*, and wee the brain. But of this ridiculous mistake, and the occasion of itt, see that merie passage of Muret (lib. xii, cap. xii, *Variorum,)* worth the view, which itt seemes this doctor had not read.—*Wr.*

A similar criticism occurs in the *Gentleman's Magazine* for 1820, p. 420. It is very singular that these critics, especially the dean, should not have remarked that Sir Thomas was perfectly aware of this homonymy, as he called it (page 440,) and by the expression here used, "*if* strictly taken for the phœnix," he evidently means that it is *not* so to be taken, but to be understood as referring to the fruit of the palm-tree.

CHAPTER XIII.

Of Frogs, Toads, and Toad-stone.

CONCERNING the venomous urine of toads, of the stone in the toad's head,[7] and of the generation of frogs, conceptions are entertained which require consideration. And first, that a toad pisseth, and this way diffuseth its venom, is generally received, not only with us, but also in other parts; for so hath

[7] *concerning, &c.*] The story of the jewel in the toad's head, celebrated in Shakspeare, must be classed among fables. Toads have uniformly been considered objects of aversion, and very generally are believed to be venomous. On this point contrary opinions have been held even by naturalists of the present day. Cuvier expressly denies it; the English editors of *Cuvier's Animal Kingdom* discountenance, though they do not absolutely deny, the accusation; (vol. ix, 451) observing that toads are *comparatively* harmless: that when surprised, they distil from the tubercles on the skin a white and fetid humour;—shoot a peculiar fluid from the *anus*; and attempt to bite. But their bite occasions no great inconvenience, merely producing at times a slight inflammation. They assert that neither the liquid ejaculated from the *anus*, nor that which oozes from the skin is venomous; yet they admit that, when swallowed, these fluids have produced violent nausea, &c. M. Bosc asserts that the same symptoms will be occasioned by putting the hand to the nose after handling the toad. Schelhammer mentions a child which had a severe pustulory eruption from having had a toad held some minutes before its mouth. They describe the liquid as very bitter, acrid, and caustic. In the 64th vol. of *Tilloch's Philosophical Magazine*, there is a paper, by Mr. Fothergill, on the manners and habits of the toad, in which he professes to prove "not only its innocency, but its usefulness." He relates many observations, proving its utility as a destroyer of caterpillars, &c.;—but in *proof* of their harmlessness he only offers the following expression of his own opinion. "The writer hopes he has established the character of toads as to their usefulness; and that they are devoid of all poisonous or venomous qualities whatever, he is perfectly satisfied, from many years' observation and experience, having handled them in all directions, opened their mouths, and given them every opportunity and every provocation to exert their venomous powers, if possessed of any." In short, he believes them to be the most patient and harmless of all reptiles!

Dr. John Davy, in a paper read before the Royal Society, Dec. 22, 1825, asserts the accuracy of the ancient opinion, that the toad is poisonous, but he does not appear to have made any new discovery of importance, unless it be that the fluid, secreted on the back, and existing in the bile, the blood, and the urine of the animal is *not injurious*, much less *fatal*, when absorbed and carried into circulation. Other naturalists have admitted the acrid nature of the fluid, and even, in certain cases, its deleterious effects when taken into the stomach, who maintain that it is not venomous. On the whole, Dr. Davy does not appear to have proved that the toad is to be classed among *venomous reptiles*, properly so called.

White says, "he well remembers the time, when a quack, at this village, ate a toad to make the country people stare." He mentioned, from undoubted authority, that "some ladies took a fancy to a toad, which they nourished summer after summer for many years, till he grew to a monstrous size, with the maggots which turn to flesh flies. The reptile used to

Scaliger observed in his comment, *Aversum urinam reddere ob oculos persecutoris perniciosam ruricolis persuasum est;* and Matthiolus hath also a passage, that a toad communicates its venom not only by urine, but by the humidity and slaver of its mouth;[8] which, notwithstanding, strictly understood, may admit of examination: for some doubt may be made whether a toad properly pisseth, that is, distinctly and separately voideth the serous excretion; for though not only birds, but oviparous quadrupeds and serpents have kidneys and ureters, and some fishes also bladders; yet for the moist and dry excretion they seem at last to have but one vent and common place of exclusion; and with the same propriety of language we may ascribe that action unto crows and kites. And this not only in frogs and toads, but may be enquired in tortoises: that is, whether that be strictly true, or to be taken for a distinct and separate miction,[9] when Aristotle affirmeth, that no oviparous animal, that is, which either spawneth or layeth eggs, doth urine, except the tortoise.

The ground or occasion of this expression might from hence arise, that toads are sometimes observed to exclude or spirt out a dark and liquid matter behind:[1] which we have observed to be true, and a venomous condition there may be perhaps therein, but some doubt there may be, whether this is to be called their urine, not because it is emitted aversely or backward by both sexes, but because it is confounded with the intestinal excretions and egestions of the belly; and this

come forth every evening from a hole under the garden steps, and was taken up, after supper, on the table to be fed. He fell a sacrifice at length to a tame raven.*v*

The fluid, ejected from the *anus* of toads and frogs, (especially *R. temporaria)* is not urine.

8 *not only by urine, &c.*] A strange and horrible example of this (toade killing by the mouth) there fel out in Dorset, not far from my habitation. A countrywoman, having the young sonne of a great person to nurse, willing to visit her reapers in the next field, but not willing to leave the childe alone in the house asleep, took itt with her; and, while shee distributed some drinke to the workers, layd the childe at the foote of a barley-cock: whome, when shee came to take up againe, shee found dade and swolen, and turning up the cloaths of the childe, found a huge toade hanging fast on the bellicock of the child, which the venomous beast had wholy swalowed, and by that quil diffused his deadly poison into all the vital parts of the infant; at which sight the poore woman fell distracted.—*Wr.*

9 *miction.*] Not in Johnson: evidently a coinage from the Latin word, *mingo.*

1 *behind.*] And I have often seen this spirting, which the vulgar rationally call pissing, though itt be not urine, but certainlye something analogicall.—*Wr.*

way is ordinarily observed, although possible it is that the liquid excretion may sometimes be excluded without the other.[2]

As for the stone commonly called the toad-stone, which is presumed to be found in the head of that animal, we first conceive it not a thing impossible; nor is there any substantial reason why, in a toad, there may not be found such hard and lapideous concretions: for the like we daily observe in the heads of fishes, as cods, carps, and perches; the like also in snails, a soft and exosseous animal, whereof in the naked and greater sort, as though she would requite the defect of a shell on their back, nature, near the head,[3] hath placed a flat white stone, or rather testaceous concretion: which, though Aldrovandus affirms, that after dissection of many he found but in some few, yet of the great grey snails[4] I have not met with any that wanted it; and the same indeed so palpable, that without dissection it is discoverable by the hand.

Again, though it be not impossible, yet it is surely very rare; as we are induced to believe from some enquiry of our own, from the trial of many who have been deceived, and the frustrated search of Porta, who, upon the explorement of many, could scarce find one. Nor is it only of rarity, but may be doubted whether it be of existency, or really any such stone in the head of a toad at all. For although lapidaries and questuary enquirers affirm it, yet the writers of minerals and natural speculators are of another belief: conceiving the stones, which bear this name,[5] to be a mineral concretion, not to be found in animals, but in fields. And therefore Boëtius refers it to *asteria*, or some kind of *lapis stellaris*, and plainly concludeth, *reperiuntur in agris, quos tamen alii in annosis, ac qui diu in arundinetis, inter rubos*

[2] *and this way is, &c.*] This sentence was first added in the 6th edit.

[3] *near the head.*] In the very same place on the top of the back, where the shell of the other snayle is fastened.—*Wr.*

[4] *grey snails.*] I have heard itt avowched by persons of great quality, contemporarye to the old Lord Burleigh, Lord Treasurer of Englande, that hee alwayes wore a blue ribbon (next his leg, garter-wise) studded (thick) with these shels of the grey snayles, to allaye the heate of the goute, and that hee profest that hee found manifest releef in itt; and that yf by chance hee lefte itt off, the paine would ever returne most vehementlye.—*Wr.*

[5] *this name.*] Toadstone, or *bufonite*, a species of *traprock*, called *amygdaloid*. It occurs in the traprock of Derbyshire, near Matlock.

sentesque delituerunt, bufonis capitibus generari pertinaciter affirmant.

Lastly, if any such thing there be, yet must it not, for aught I see, be taken as we receive it, for a loose and moveable stone, but rather a concretion or induration of the crany itself; for being of an earthy temper, living in the earth, and as some say feeding thereon, such indurations may sometimes happen. Thus when Brassavolus after a long search had discovered one, he affirms it was rather the forehead bone petrified, than a stone within the crany; and of this belief was Gesner. Which is also much confirmed from what is delivered in Aldrovandus, upon experiment of very many toads, whose cranies or sculls in time grew hard, and almost of a stony substance.[6] All which considered, we must with circumspection receive those stones which commonly bear this name, much less believe the traditions, that in envy to mankind they are cast out, or swallowed down by the toad;[7] which cannot consist with anatomy, and with the rest enforced this censure from Boëtius, *ab eo tempore pro nugis habui quod de bufonio lapide, ejúsque origine traditur.*

What therefore best reconcileth these divided determinations, may be a middle opinion; that of these stones some may be mineral, and to be found in the earth, some animal, to be met with in toads, at least by the induration of their cranies. The first are many and manifold, to be found in Germany and other parts; the last are fewer in number, and in substance not unlike the stones in crabs' heads. This is agreeable unto the determination of Aldrovandus,* and is also the judgment of the learned Spigelius† in his epistle unto Pignorius.[8]

But these toadstones, at least very many thereof, which are esteemed among us, are at last found to be taken not out of toads' heads, but out of a fish's mouth, being hand-

* *De Mineral.* lib. iv. † *Musci Calceolariani*, sect. iii.

6 *Which is also, &c.*] First in 2nd edition.

7 *toad,*] See an account of a toad being found in a duck's egg, *Literary Panorama*, Aug. 1807, p. 1083.—*Jeff.*

8 *What therefore, &c.*] First in 2nd edition.

somely contrived out of the teeth of the *lupus marinus*, a fish often taken in our northern seas, as was publickly declared by an eminent and learned physcian.* But, because men are unwilling to conceive so low of their toadstones which they so highly value, they may make some trial thereof by a candent or red hot iron applied unto the hollow and unpolished part thereof, whereupon, if they be true stones, they will not be apt to burn or afford a burnt odour, which they may be apt to do, if contrived out of animal parts or the teeth of fishes.[9]

Concerning the generation of frogs, we shall briefly deliver that account which observation hath taught us. By frogs I understand, not such as, arising from putrefaction, are bred without copulation, and because they subsist not long, are called *temporariæ*;[1] nor do I mean the little frog of an excellent parrot-green, that usually sits on trees and bushes, and is therefore called *ranunculus viridis*, or *arboreus*; but hereby I understand the aquatile or water-frog, whereof, in ditches and standing plashes, we may behold many millions every spring in England. Now these do not, as Pliny conceiveth, exclude black pieces of flesh, which after become frogs; but they let fall their spawn in the water, of excellent use in physic,[2] and scarce unknown unto any. In this spawn, of a lentous and transparent body, are to be discerned many specks, or little conglobations, which in a small time become of a deep black, a substance more compacted and terrestrious than the other; for it riseth not in distillation, and affords a powder when the white and

* Sir George Ent.

[9] *But these toad-stones, &c.*] First in 6th edition.

[1] *temporaria.*] It is truly wonderful that Sir Thomas, who was not unacquainted with the generation of the frog, and who in this paragraph has correctly distinguished three species, the *temporaria*, or common garden frog, the tree frog, and the water-frog, (the *esculenta*), should propose a position so gratuitous and absurd as that *one* of these species owes its origin to putrefaction.

[2] *spawn in the water, &c.*] The happiest experiment of this water, that I ever yet saw, was at Sir Thomas Coghil's, of Bletchington; where his eldest sonne, the squire (a widower) after a full liberal use of new claret in the must, for (5) continuate days fell into such an hæmorraghia at the nose, as by all applications inward and outward could not in 30 hours bee stopt; at last, sending for the surgeon, diverted itt by phlebotomy: the surgeon advisedly refusing to do itt, till he had given a scruple of diascordium in that water which saved it.—*W*r.

aqueous part is exhaled. Now of this black or dusky substance is the frog at last formed; as we have beheld, including the spawn with water in a glass, and exposing it unto the sun. For that black and round substance, in a few days, began to dilate and grow longer, after awhile, the head, the eyes, the tail, to be discernable, and at last to become that which the ancients called *gyrinus*,[3] we a porwigle, or tadpole.[4] This in some weeks after becomes a perfect frog, the legs growing out before, and the tail wearing away, to supply the other behind; as may be observed in some which have newly forsaken the water; for in such, some part of the tail will be seen, but curtailed and short, not long and finny as before. A part provided them awhile to swim and move in the water, that is, until such time as nature excluded legs, whereby they might be provided not only to swim in the water, but move upon the land, according to the amphibious and mixt intention of nature, that is to live in both. So that whoever observeth the first progression of the seed before motion, or shall take notice of the strange indistinction of parts in the tadpole, even when it moveth about, and how successively the inward parts do seem to discover themselves, until their last perfection, may easily discern the high curiosity of

[3] *gyrinus*,] This is the name of a genus of beetles.

[4] *tadpole*.] Upon tryall I found that the tayle, after the space of a moone from the spawning, by degrees parted itt self into 2 legs, drawing dayly more and more till itt came to the vent of the belly. This experiment I made at Bishop's Fountill, Wiltes, where having digd a new pond, in a fatty soil of white malme, upon the head of a strong spring (the midst of October, 1625), I let it rest till February following, at what time observing the banks full of spawne, I causd a bottomless tubb, perforated with small holes, to bee sett in the pond, into which I putt a great quantity of spawne, at the full of the moone watching itt every day till the next full moone in March: by which times the tayles being growne 2 inches (like the tayle of a bleake or small gogeon) began visibly to grow *bifide*, and after one weeke was perfectly shaped into 2 legs, by help whereof, they gott over the tub into the neighbor pond, where they became an excellent food for some store of trouts, which used to feed from my hand, and grew so large thereby, that one of them was full 22 inches fish between the head and the tayle; as some worthy friends yet living can well remember, being present both at the taking and the eating.

Since this observation of the fishye tayle of a frog *cleaving* into 2 legs, I conceave that the Spaniards make a wholesome viand, and count itt a dish fitt for a princes table: which putts mee in minde of a storye which I received from my brother, the new Lord Bp. of Elye, and Count Palatine: what time following (the then) Prince Charles into Spain by appointment, and were come into the porte at Laredo, they were invited by the governor to dinner, and at the second course had a dish of the hinder legs of *these* frogs fryed, as a dainty of more esteem with them then the patrich.—*Wr.*

nature in these inferior animals, and what a long line is run to make a frog.

And because many affirm and some deliver, that in regard it hath lungs and breatheth, a frog may be easily drowned, though the reason be probable, I find not the experiment answerable; for fastning one about a span under water, it lived almost six days.[5] Nor is it only hard to destroy one in water, but difficult also at land: for it will live long after the lungs and heart be out; how long it will live in the seed, or whether the spawn of this year being preserved, will not arise into frogs in the next, might also be enquired: and we are prepared to try.

CHAPTER XIV.

That a Salamander lives in the fire.

THAT a salamander is able to live in flames, to endure and put out fire, is an assertion, not only of great antiquity, but confirmed by frequent and not contemptible testimony. The Egyptians have drawn it into their hieroglyphicks,[6] Aristotle seemeth to embrace it; more plainly Nicander, Sarenus Sammonicus, Ælian, and Pliny, who assigns the cause of this effect: an animal (saith he) so cold, that it extinguisheth the fire like ice. All which notwithstanding, there is on the negative, authority and experience; Sextius a physician, as Pliny delivereth, denyed this effect; Dioscorides affirmed it a point of folly to believe it; Galen, that it endureth the fire awhile, but in continuance is consumed therein. For experimental conviction, Matthiolus affirmeth, he saw a salamander burnt in a very short time; and of the like assertion is Amatus Lusitanus; and most plainly Pierius, whose words in his hieroglyphicks are these: "Whereas it is commonly said, that a salamander extinguisheth fire, we have found by experience, that it is so far from quenching hot coals, that it dyeth

[5] *Nor is it only, &c.*] First added in 5th edition.

[6] *The Egyptians, &c.*] So says Pierius, (p. 162, II,) but without authority, "*Le lezard*" is mentioned by Champollion as an Egyptian hieroglyphick. *Précis*, p. 303.

immediately therein." As for the contrary assertion of Aristotle, it is but by hear-say, 'as common opinion believeth,'—*Hæc enim (ut aiunt) ignem ingrediens eum extinguit;* and therefore, there was no absurdity in Galen, when as a septical medicine* he commended the ashes of a salamander; and magicians in vain, from the power of this tradition, at the burning of towns and houses expect a relief from salamanders.

The ground of this opinion might be some sensible resistance of fire observed in the salamander: which being, as Galen determineth, cold in the fourth, and moist in the third degree, and having also a mucous humidity above and under the skin, by virtue thereof it may awhile endure the flame; which being consumed, it can resist no more. Such an humidity there is observed in newts, or water-lizards, especially if their skins be perforated or pricked; thus will frogs and snails endure the flame; thus will whites of eggs, vitreous or glassy phlegm, extinguish a coal; thus are unguents made which protect awhile from the fire; and thus, beside the *Hirpini*, there are later stories of men that have passed untouched through the fire. And therefore some truth we allow in the tradition: truth according unto Galen, that it may for a time resist a flame, or, as Scaliger avers, extinguish or put out a coal; for thus much will many humid bodies perform: but that it perseveres and lives in that destructive element, is a fallacious enlargement. Nor do we reasonably conclude, because for a time it endureth fire, it subdueth and extinguisheth the same,—because by a cold and aluminous moisture it is able awhile to resist it, from a peculiarity of nature it subsisteth and liveth in it.

It hath been much promoted by stories of incombustible napkins and textures which endure the fire, whose materials are called by the name of salamander's wool. Which many too literally apprehending, conceive some investing part, or tegument of the salamander: wherein, beside that they mistake the condition of this animal, (which is a kind of lizard, a quadruped corticated and depilous, that is, without wool, fur,

* A corruptive medicine, destroying the parts like arsenic.

or hair,[7]) they observe not the method and general rule of nature; whereby all quadrupeds oviparous, as lizards, frogs, tortoises, chameleons, crocodiles, are without hair, and have no covering part or hairy investment at all. And if they conceive that, from the skin of the salamander, these incremable[8] pieces are composed, beside the experiments made upon the living, that of Brassavolus will step in, who, in the search of this truth, did burn the skin of one dead.

Nor is this salamander's wool desumed[9] from any animal, but a mineral substance, metaphorically so called from this received opinion. For (beside Germanicus's heart, and Pyrrhus's great toe, which would not burn with the rest of their bodies,) there are, in the number of minerals, some bodies incombustible; more remarkably that which the ancients named *asbeston*,[1] and Pancirollus treats of in the chapter of *linum vivum*. Whereof by art were weaved napkins,[2] shirts, and coats, inconsumable by fire; and wherein in ancient times, to preserve their ashes pure and without commixture, they burnt the bodies of kings. A napkin hereof Pliny reports that Nero had; and the like, saith Paulus Venetus, the emperor of Tartary sent unto Pope Alexander; and also affirms that in some part of Tartary there were mines of iron whose filaments were woven into incombustible cloth. Which rare manufacture, although delivered for lost by Pancirollus, yet Salmuth, his commentator, affirmeth, that one Podocate-

[7] *which is a kind of lizard, &c.*] *Lacerta Salamandra, Lin.* The salamanders constitute a separate group among the order *Batrachia*, of the class *Reptilia*:—divided into land and water salamanders; to the former of which belongs the Linnean salamander, and to the latter, the water lizard, or *newt*. It is scarcely necessary to say that the fire story is a mere fable.

[8] *incremable.*] Incombustible.

[9] *desumed.*] Obtained, taken from.

[1] *asbeston.*] *Asbeston* is a mineral, of which there are five varieties;—1. *amianthus*, or *fibrous*. The ancients manufactured cloth of this; and several moderns have succeeded in doing the same. 2. *Common asbestus*. 3. *Mountain leather*, or when very thin, *mountain paper*: consists of fibrous parts so interwoven as to become tough. 4. *Mountain cork*, or *elastic asbestus*: resembles the preceding, but elastic. It swims on water; receives an impression from the nail; and is very tough. 5. *Mountain wood*, or *ligniform asbestus*, has the aspect of wood; internal lustre glimmering; soft, sectile, and tough. (*Ure.*)

Fibres of asbestus have been employed to make lamps.

It is not, however, absolutely indestructible by fire, though it long resists its action.

[2] *napkins.*] Sir Henrye Wooton (embassador att Venice almost twenty yeares) among many other choyce rarittyes had one of these napkins, which hee told mee hee could never gaine for moneye, till the Duke sent him that one for a new year's gifte.—*Wr.*

rus, a Cyprian, had shewed the same at Venice; and his materials were from Cyprus, where indeed, Dioscorides placeth them; the same is also ocularly confirmed by Vives upon Austin, and Maiolus in his *Colloquies*. And thus in our days do men practise to make long-lasting snasts[3] for lamps out of *alumen plumosum;* and by the same we read in Pausanias, that there always burnt a lamp before the image of Minerva.

CHAPTER XV.

Of the Amphisbæna.

THAT the amphisbæna, that is, a smaller kind of serpent, which moveth forward and backward, hath two heads, or one at either extreme, was affirmed first by Nicander, and after by many others—by the author of the book, *De Theriaca ad Pisonem*, ascribed unto Galen; more plainly Pliny, *Geminum habet caput, tanquam parum esset uno ore effundi venenum;* But Ælian most confidently, who referring the conceit of *chimæra* and *hydra* unto fables, hath set down this as an undeniable truth.

Whereunto while men assent, and can believe a bicipitous conformation in any continued species, they admit a gemination of principal parts, not naturally discovered in any animal. True it is, that other parts in animals are not equal; for some make their progression with many legs, even to the number of an hundred, as *juli, scolopendræ*, or such as are termed *centipedes;* some fly with two wings, as birds and many insects; some with four, as all farinaceous or mealy-winged animals, as butterflies and moths; all vaginipennous or sheath-winged insects, as beetles and dorrs; some have three testicles, as Aristotle speaks of the buzzard; and some have four stomachs, as horned and ruminating animals; but, for the principal parts, the liver, heart, and especially the

[3] *snasts.*] The burnt wicks of candles. A Norfolk provincialism. See *Forby's Vocab.*

brain, regularly they are but one in any kind of species whatsoever.

And were there any such species or natural kind of animal, it would be hard to make good those six positions of body, which according to the three dimensions are ascribed unto every animal; that is, *infra, supra, ante, retro, dextrorsum, sinistrorsum:* for if (as it is determined) that be the anterior and upper part wherein the senses are placed, and that the posterior and lower part which is opposite thereunto, there is no inferior or former part in this animal; for the senses being placed at both extremes, doth make both ends anterior, which is impossible, the terms being relative, which mutually subsist, and are not without each other. And therefore this duplicity was ill contrived, to place one head at both extremes, and had been more tolerable to have settled three or four at one. And therefore, also, poets have been more reasonable than philosophers, and *Geryon* or *Cerberus* less monstrous than amphisbæna.

Again, if any such thing there were, it were not to be obtruded by the name of amphisbæna, or as an animal of one denomination; for properly that animal is not one, but multiplicious or many, which hath a duplicity or gemination of principal parts. And this doth Aristotle define, when he affirmeth a monster is to be esteemed one or many, according to its principle, which he conceived the heart; whence he derived the original of nerves, and thereto ascribed many acts which physicians assign unto the brain. And therefore, if it cannot be called one, which hath a duplicity of hearts in his sense, it cannot receive that appellation with a plurality of heads in ours. And this the practice of Christians hath acknowledged, who have baptized these geminous births and double connascencies, with several names, as conceiving in them a distinction of souls, upon the divided execution of their functions; that is, while one wept, the other laughing; while one was silent, the other speaking; while one awaked, the other sleeping; as is declared by three remarkable examples in Petrarch, Vincentius, and the Scottish history of Buchanan.

It is not denied there have been bicipitous serpents with

the head at each extreme, for an example hereof we find in Aristotle, and of the like form in Aldrovandus we meet with the icon of a lizard; and of this kind, perhaps, might that amphisbæna be, the picture whereof Cassianus Puteus shewed unto the learned Faber.[4] Which double formations do often happen unto multiparous generations, more especially that of serpents; whose productions being numerous, and their eggs in chains or links together, (which sometime conjoin and inosculate into each other,) they may unite into various shapes, and come out in mixed formations. But these are monstrous productions, beside the intention of nature, and the statutes of generation, neither begotten of like parents, nor begetting the like again; but, irregularly produced, do stand as anomalies in the general book of nature. Which being shifts and forced pieces, rather than genuine and proper effects, they afford us no illation; nor is it reasonable to conclude from a monstrosity unto a species, or from accidental effects unto the regular works of nature.

Lastly, the ground of the conceit was the figure of this animal, and motion ofttimes both ways; for described it is to be like a worm, and so equally framed at both extremes, that at an ordinary distance it is no easy matter to determine which is the head; and therefore, some observing them to move both ways, have given the appellation of heads unto both extremes, which is no proper and warrantable denomination;[5] for many animals, with one head, do ordinarily perform both different and contrary motions; crabs move sideling, lobsters will swim swiftly backward, worms and leeches will move both ways, and so will most of those animals whose bodies consist of round and annulary fibres, and move by undulation; that is, like the waves of the sea, the one protruding the other, by inversion whereof they make a backward motion.

[4] *and of this kind, &c.*] First in 3rd edition.

[5] *so equally framed, &c.*] This explanation is quite correct. The *amphisbæna* is characterized by the rings of square scales which surround its body, and by its tail, being nearly similar in form and size to the head, so that it is not easy at a glance to distinguish the one from the other, the eyes being remarkably small. They are not venomous; and have the power of moving both backwards and forwards—whence their name. It is very unaccountably spelt *amphisbœna*, in *Griffith's Cuvier*, and in *Gray's Synopsis*, at the end of the 9th vol. of that work.

Upon the same ground hath arisen the same mistake concerning the scolopendra or hundred-footed insect, as is delivered by Rhodiginus from the scholiast of Nicander: *Dicitur à Nicandro, ἀμφικαρὴς, id est, dicephalus aut biceps fictum vero, quoniam retrorsum (ut scribit Aristotles) arrepit,* observed by Aldrovandus, but most plainly by Muffetus, who thus concludeth upon the text of Nicander: *Tamen pace tanti authoris dixerim, unicum illi duntaxat caput, licèt pari facilitate, prorsum capite, retrorsum ducente caudâ, incedat, quod Nicandro aliisque imposuisse dubito:* that is, under favour of so great an author, the scolopendra hath but one head, although with equal facility it moveth forward and backward, which I suspect deceived Nicander and others.

And therefore we must crave leave to doubt of this double-headed serpent until we have the advantage to behold, or have an iterated ocular testimony concerning such as are sometimes mentioned by American relators, and also such as Cassianus Puteus shewed in a picture to Johannes Faber, and that which is set down under the name of *amphisbæna europæa,* in his learned discourse upon *Hernandez's History of America.*[6]

CHAPTER XVI.

That young Vipers force their way through the bowels of their Dam.

THAT the young vipers force their way through the bowels of their dam, or that the female viper, in the act of generation, bites off the head of the male, in revenge whereof the young ones eat through the womb and belly of the female, is a very ancient tradition; in this sense entertained in the hieroglyphicks of the Egyptians;[7] affirmed by Herodotus, Nicander, Pliny, Plutarch, Ælian, Jerome, Basil, Isidore; seems countenanced by Aristotle and his scholar Theophrastus: from hence is

[6] *and therefore, &c.*] First added in 6th edition.

[7] *in this sense, &c.*] Also from Pierius, 143, c. and Horapollo, 115.

commonly assigned the reason why the Romans punished parricides by drowning them in a sack with a viper. And so perhaps, upon the same opinion, the men of Melita, when they saw a viper upon the hand of Paul, said presently, without conceit of any other sin, "No doubt this man is a murderer, who, though he have escaped the sea, yet vengeance suffereth him not to live:" that is, he is now paid in his own way, the parricidous animal and punishment of murderers is upon him. And though the tradition were current among the Greeks, to confirm the same, the Latin name is introduced, *Vipera quasi vi pariat.* That passage also in the gospel, "O ye generation of vipers!" hath found expositions which countenance this conceit. Notwithstanding which authorities, transcribed relations and conjectures, upon enquiry we find the same repugnant unto experience and reason.[8]

And first, it seems not only injurious unto the providence of nature, to ordain a way of production which should destroy the producer, or contrive the continuation of the species by the destruction of the continuator, but it overthrows and frustrates the great benediction of God, "God blessed them, saying, be fruitful and multiply." Now, if it be so ordained that some must regularly perish by multiplication, and these be the fruits of fructifying in the viper, it cannot be said that God did bless, but curse, this animal; "Upon thy belly shalt thou go, and dust shalt thou eat all thy life," was not so great a punishment unto the serpent after the fall, as "increase, be fruitful and multiply," was, before. This were to confound the maledictions of God, and translate the curse of the woman upon the serpent; that is, *in dolore paries,* "in sorrow shalt thou bring forth;" which, being proper unto the woman, is verified best in the viper, whose delivery is not only accompanied with pain, but also with death itself. And lastly, it overthrows the careful course and parental provision of

[8] *and reason.*] Honest master Ross is very pertinacious in his opposition to the arguments of our author, as to the improbability and unreasonableness of the vulgar tenet respecting the viper—that it loses its own life in giving life to its progeny; and in some respects he opposes them with some plausibility. (See *Arcana*, page 149.) For there are not wanting parallels and well-authenticated cases in which the act of propagation is fatal: though in the present case it is not so.

nature, whereby the young ones newly excluded are sustained by the dam, and protected until they grow up to a sufficiency for themselves. All which is perverted in this eruptive generation; for the dam being destroyed, the younglings are left to their own protection; which is not conceivable they can at all perform, and whereof they afford us a remarkable confirmance many days after birth: for the young ones, supposed to break through the belly of the dam, will, upon any fright, for protection run into it; for then the old one receives them in at her mouth, which way, the fright being past, they will return again;[9] which is a peculiar way of

[9] *will upon any fright, &c.*] This is admitted to be true of the rattle-snake, but denied of the viper. I subjoin two passages from *Cuvier*, by Griffiths, vol. ix, pp. 344, 356.

"The *crotali* are viviparous; at Martinique it is the general persuasion that the offspring are eaten by the vipers when they are very young, and a little after their birth. According to M. Palisot de Beauvois, this prejudice derives its origin from a fact wrongly interpreted. In the first journey made by this naturalist, in the country of the native *Teharlokee*, he saw a *crotalus horridus* in a path, and approached it as softly as possible. At the moment when it was about to be struck, the animal agitated its rattles, opened a wide throat, and received into it five little ones, about as thick each as a goose-quill. But at the end of ten minutes, believing itself out of danger, it opened its mouth again and let the young ones out, which, however, entered there again, on the appearance of a new danger. M. Guillemart, a countryman of our own, has verified the same fact."

"In the fine days of early spring, the vipers may be seen basking in the morning sun, on little hills exposed to an eastern aspect, and they speedily occupy themselves in the great work of propagating their species. The act of generation takes a very long time in its accomplishment, and its result is the vivification of from twelve to twenty-five eggs, almost as large as these of wrens or titmice. These exclude the young, in the womb of the mother, and there they remain coiled up, and come to the length of three or four inches before they issue forth, which they generally do in the course of the fourth month after fecundation. Having thus, by a sort of parturition, quitted their mother, the young vipers, for some time after, carry with them the remains of the egg which enclosed them, and which then have the appearance of irregularly torn membranes. But from that time they are entirely strangers to the being which gave them birth, and do not seek refuge in her mouth, on the approach of danger, as the ancients erroneously imagined."

This resemblance of the remains of the egg which the young vipers carry about with them, to "irregularly torn membranes," may possibly have promoted the popular error under discussion. White has the following remarks.

"Though they are oviparous, yet they are viviparous also, hatching their young within their bellies, and then bringing them forth. Whereas snakes lay chains of eggs every summer in my melon beds, in spite of all that my people can do to prevent them; which eggs do not hatch till the spring following, as I have often experienced. Several intelligent folks assure me that they have seen the viper open her mouth and admit her helpless young down her throat on sudden surprises, just as the female opossum does her brood into the pouch under her belly, upon the like emergencies; and yet the London viper catchers insist on it, to Mr. Barrington, that no such thing ever happens."

"On August the 4th, 1775, we surprised a large viper, which seemed very heavy and bloated, as it lay in the grass basking in the sun. When we came to cut it up, we found that the abdomen was crowded with young, fifteen in number; the short-

refuge, and although it seem strange, is avowed by frequent experience and undeniable testimony.[1]

As for the experiment, although we have thrice attempted it, it hath not well succeeded; for though we fed them with milk, bran, cheese, &c. the females always died before the young ones were mature for this eruption; but rest sufficiently confirmed in the experiments of worthy enquirers. Wherein to omit the ancient conviction of Apollonius, we shall set down some few of modern writers. The first, of Amatus Lusitanus, in his comment upon Dioscorides, *Vidimus nos viperas prægnantes inclusas pixidibus parere, quæ inde ex partu nec mortuæ, nec visceribus perforatæ manserunt.* The second is that of Scaliger, *Viperas ab impatientibus moræ fœtibus numerosissimis ruinpi atque interire, falsum esse scimus, qui in Vincentii Camerini circulatoris lignea theca vidimus enatas viperellas, parente salvâ.* The last, and most plain, of Franciscus Bustamantinus, a Spanish physician of Alcala de Henares, whose words, in his third *De Animantibus Scripturæ*, are these: *Cùm verò per me et per alios hæc ipsa disquisissem servatâ viperina progenie, &c.* that is, when by myself and others, I had enquired the truth hereof, including vipers in a glass, and feeding them with cheese and bran, I undoubtedly found, that the viper was not delivered by the tearing of her bowels; but I beheld the young ones excluded by the passage of generation, near the orifice of the siege.[2] Whereto we might also add the ocular confirmation of Lacuna upon Dioscorides, Ferdinandus Im-

est of which measured full seven inches, and were about the size of full-grown earth-worms. This little fry issued into the world with the true viper-spirit about them, showing great alertness as soon as disengaged from the belly of the dam: they twisted and wriggled about, and set themselves up, and gaped very wide when touched with a stick, showing manifest tokens of menace and defiance, though as yet they had no manner of fangs that we could find, even with the help of our glasses."

"There was little room to suppose that this brood had ever been in the open air before; and that they were taken in for refuge, at the mouth of the dam, when she perceived that danger was approaching; because then probably we should have found them somewhere in the neck, and not in the abdomen."

[1] *undeniable testimony.*] Particularly by Scaliger, *Exercit.* 101, ἐξ αὐτοψίας. The like is sayde of the weasel, that shee brings forth at the mouth, bycause they saw her remove her young ones with her mouth. And that Juno turned Galanthis, Alcmena's mayd, into a weasel, εἰς τὴν γάλην, bycause shee had cousened her with a lye, that her mistress was brought a bed.—*Wr.*

[2] *I undoubtedly found, &c.*] This is perfectly correct. See note 9, p. 460.

peratus, and that learned physician of Naples, Aurelius Severinus.[3]

Now, although the tradition be untrue, there wanted not many grounds which made it plausibly received. The first was, a favourable indulgence and special contrivance of nature, which was the conceit of Herodotus, who thus delivereth himself:—"Fearful animals, and such as serve for food, nature hath made more fruitful; but upon the offensive and noxious kind she hath not conferred fertility. So the hare, that becometh a prey unto man, unto beasts, and fowls of the air, is fruitful even to superfœtation; but the lion, a fierce and ferocious animal, hath young ones but seldom, and also but one at a time. Vipers indeed, although destructive, are fruitful; but, lest their number should increase, Providence hath contrived another way to abate it; for in copulation the female bites off the head of the male, and the young ones destroy the mother." But this will not consist with reason, as we have declared before. And if we more nearly consider the condition of vipers and noxious animals, we shall discover another higher provision of nature: how, although in their paucity she hath not abridged their malignity, yet hath she notoriously effected it by their secession or latitancy. For not only offensive insects, as hornets, wasps, and the like, but sanguineous corticated animals, as serpents, toads, and lizards, do lie hid and betake themselves to coverts in the winter. Whereby most countries enjoying the immunity of Ireland and Candy, there ariseth a temporal security from their venoms, and an intermission of their mischiefs, mercifully requiting the time of their activities.

A second ground of this effect was conceived, the justice of nature, whereby she compensates the death of the father by the matricide or murder of the mother; and this was the expression of Nicander. But the cause hereof is as improbable as the effect; and were indeed an improvident revenge in the young ones, whereby in consequence, and upon defect of provision, they must destroy themselves. And whereas he expresseth this decollation of the male by so full a term as

[3] *Whereto, &c.*] First added in 3rd edition.

ἀποκόπτειν, that is to cut or lop off, the act is hardly conceivable; for the female viper hath but two considerable teeth, and those so disposed, so slender and needle pointed, that they are apter for puncture than any act of incision. And if any like action there be, it may be only some fast retention or sudden compression in the *orgasmus* or fury of their lust, according as that expression of Horace is construed concerning Lydia and Telephus;

> ———Sive puer furens,
> Impressit memorem dente labris notam.

Others ascribe this effect unto the numerous conception of the viper; and this was the opinion of Theophrastus; who, though he denieth the exesion or forcing through the belly, conceiveth nevertheless that, upon a full and plentiful impletion there may, perhaps, succeed a disruption of the matrix, as it happeneth sometimes in the long and slender fish *acus*.* Now, although in hot countries, and very numerous conceptions, in the viper or other animals, there may sometimes ensue a dilaceration of the genital parts, yet is this a rare and contingent effect, and not a natural and constant way of exclusion. For the wise Creator hath formed the organs of animals unto their operations, and in whom he ordaineth a numerous conception, in them he hath prepared convenient receptacles, and a suitable way of exclusion.

Others do ground this disruption upon their continued or protracted time of delivery, presumed to last twenty days; whereat, excluding but one a day, the latter brood, impatient, by a forcible proruption anticipate their period of exclusion; and this was the assertion of Pliny, *Cæteri tarditatis impatientes prorumpunt latera, occisâ parente;* which was occasioned upon a mistake of the Greek text in Aristotle, τίκτει δὲ ἐν μιᾷ ἡμέρᾳ καθ' ἕν, τίκτει δὲ πλείω ἢ εἴκοσιν, which are literally thus translated, *Parit autem unâ die secundùm unum, parit autem plures quàm viginti,* and may be thus Englished, "She bringeth forth in one day, one by one, and sometimes more than twenty:" and so hath Scaliger rendered it, *Sigillatim parit,*

* Needle-fish; found sometimes upon the sea-shore, consisting of four lines unto the vent, and six from thence unto the head.

absolvit unâ die, interdum plures quàm viginti; but Pliny, whom Gaza followeth, hath differently translated it, *Singulos diebus singulis parit, numero fere viginti;* whereby he extends the exclusion unto twenty days, which in the textuary sense is fully accomplished in one.

But what hath most advanced it, is a mistake in another text of Aristotle, which seemeth directly to determine this disruption, τίκτει μικρὰ ἐχίδεια ἐν ὑμέσιν αἳ περιήγνυνται τριταῖοι, ἐνίοτε δὲ καὶ ἔσωθεν διαφαγόντα αὐτὰ ἐξέρχεται, which Gaza hath thus translated, *Parit catulos obvolutos membranis, quæ tertio die rumpuntur, evenit interdum ut qui in utero adhuc sunt abrosis membranis prorumpant.* Now herein probably Pliny, and many since have been mistaken; for the disruption of the membranes or skins, which include the young ones, conceiving a dilaceration of the matrix and belly of the viper; and concluding, from a casual dilaceration, a regular and constant disruption.

As for the Latin word, *vipera,* which in the etymology of Isidore promoteth this conceit, more properly it may imply *vivipera.*[4] For whereas other serpents lay eggs,[5] the viper excludeth living animals; and though the *cerastes* be also viviparous, and we have found formed snakes in the belly of the *cæcilia* or slow-worm, yet may the viper emphatically bear the name. For the notation or etymology is not of necessity adequate unto the name; and therefore, though animal be deduced from *anima,* yet aré there many animations beside, and plants will challenge a right therein as well as sensible creatures.

As touching the texts of Scripture, and compellation of the Pharisees by "generation of vipers," although constructions be made hereof conformable to this tradition, and it may be plausibly expounded, that out of a viperous condition they conspired against their prophets and destroyed their spiritual parents; yet (as Jansenius observeth) Gregory and Jerome do make another construction; apprehending thereby what is usually implied by that proverb, *Mali corvi, malum ovum;*

[4] *As for the Latin word, &c.*] The correct derivation of the word is here assigned.

[5] *eggs.*] That the eele is *vivipara,* see my demonstrative note 9, supra p. 442.

that is, "of evil parents, an evil generation," a posterity not unlike their majority, of mischievous progenitors a venomous and destructive progeny.

And lastly, concerning the hieroglyphical account, according to the vulgar conception set down by Orus Apollo, the authority thereof is only emblematical; for were the conception true or false, to their apprehensions it expressed filial impiety:[6] which strictly taken, and totally received for truth, might perhaps begin, but surely promote this conception.

More doubtful assertions have been raised of no animal than the viper, as we have dispersedly noted; and Francisco Redi hath amply discovered in his noble observations of vipers:[7] from good reasons and iterated experiments affirming, that a viper containeth no humour, excrement, or part which, either drank or eat, is able to kill any; that the *remorsores* or dog-teeth, are not more than two in either sex; that these teeth are hollow, and though they bite and prick therewith, yet are they not venomous, but only open a way and entrance unto the poison, which notwithstanding is not poisonous except it touch or attain unto the blood; and that there is no other poison in this animal, but only that almost insipid liquor like oil of almonds, which stagnates in the sheaths and cases that cover the teeth; and that this proceeds not from the bladder of gall, but is rather generated in the head, and perhaps demitted and sent from thence into these cases by salival conduits and passages, which the head communicateth unto them.[8]

[6] *it expressed filial impiety.*] Correct, so far as the vulgar conception set down by Orus Apollo, 115. See Champollion, *Précis*, p. 303.

[7] *Francisco Redi, &c.*] Redi's experiments, as detailed in this paragraph, have been confirmed by later observations.

[8] *More doubtful, &c.*] This paragraph was first added in 6th edition.

CHAPTER XVII.

That Hares are both male and female.

THE double sex of single hares, or that every hare is both male and female, beside the vulgar opinion, was the affirmative of Archelaus, of Plutarch, Philostratus, and many more. Of the same belief have been the Jewish rabbins. The same is likewise confirmed from the Hebrew word,* which, as though there were no single males of that kind, hath only obtained a name of the feminine gender. As also from the symbolical foundation of its prohibition in the law,† and what vices therein it figured; that is, not only pusillanimity and timidity from its temper, feneration[9] or usury from its fœcundity and superfetation, but from this mixture of sexes, unnatural venery and degenerous effemination.[1] Nor are there hardly any who either treat of mutation or mixtion of sexes, who have not left some mention of this point; some speaking positively, others dubiously, and most resigning it unto the enquiry of the reader. Now hereof to speak distinctly, they must be male and female by mutation and succession of sexes, or else by composition, mixture, or union thereof.

As for the mutation of sexes, or transition into one another, we cannot deny it in hares, it being observable in man. For hereof, beside Empedocles or Tiresias, there are not a few examples: and though very few, or rather none which have emasculated or turned women, yet very many who from an esteem or reality of being women have infallibly proved men. Some at the first point of their menstruous eruptions; some in the day of their marriage; others many years after, which occasioned disputes at law, and contestations concerning a restore of the dowry. And that not only mankind, but many

* Arnabeth. † Levit. ii.

[9] *feneration.*] Usury.
[1] *of the same belief, &c.*] This passage was first added in the 3rd edition.

other animals may suffer this transexion, we will not deny, or hold it at all impossible; although I confess, by reason of the postick and backward position of the feminine parts in quadrupeds, they can hardly admit the substitution of a protrusion effectual unto masculine generation, except it be in retromingents, and such as couple backward.

Nor shall we only concede the succession of sexes in some, but shall not dispute the transition of reputed species in others; that is, a transmutation, or (as Paracelsians term it) transplantation of one into another. Hereof in perfect animals of a congenerous seed, or near affinity of natures, examples are not unfrequent, as in horses, asses, dogs, foxes, pheasants, cocks, &c. but in imperfect kinds, and such where the discrimination of sex is obscure, these transformations are more common, and in some within themselves without commixion, as particularly in caterpillars or silkworms, wherein there is a visible and triple transfiguration. But in plants, wherein there is no distinction of sex, these transplantations are conceived more obvious than any; as that of barley into oats, of wheat into darnel; and those grains which generally arise among corn, as cockle, *aracus*, *ægilops*, and other degenerations, which come up in unexpected shapes, when they want the support and maintenance of the primary and master-forms. And the same do some affirm concerning other plants in less analogy of figures; as the mutation of mint into cresses, basil into serpoil, and turnips into radishes. In all which, as Severinus* conceiveth, there may be equivocal seeds and hermaphroditical principles, which contain the radicality and power of different forms; thus in the seed of wheat there lieth obscurely the seminality of darnel, although in a secondary or inferior way, and at some distance of production; which, nevertheless, if it meet with convenient promotion, or a conflux and conspiration of causes more powerful than the other, it then beginneth to edify in chief, and contemning the superintendent form, produceth the signatures of itself.

Now therefore, although we deny not these several muta-

* *In Idea Medicinæ Philosophicæ.*

tions, and do allow that hares may exchange their sex,[2] yet this we conceive doth come to pass but sometimes, and not in that vicissitude or annual alternation as is presumed: that is, from imperfection to perfection, from perfection to imperfection; from female unto male, from male to female again, and so in a circle to both, without a permansion in either. For beside the inconceivable mutation of temper, which should yearly alternate the sex, this is injurious unto the order of nature, whose operations do rest in the perfection of their intents, which, having once attained, they maintain their accomplished ends, and relapse not again into their progressional imperfections. So if, in the minority of natural vigour, the parts of seminality take place, when upon the increase or growth thereof the masculine appear, the first design of nature is achieved, and those parts are after maintained.

But surely it much impeacheth this iterated transexion of hares, if that be true which Cardan and other physicians affirm, that transmutation of sex is only so in opinion; and that these transfeminated persons were really men at first, although succeeding years produced the manifesto or evidence of their virilities: which, although intended and formed, was not at first excluded; and that the examples hereof have undergone no real or new transexion, but were androgynally born, and under some kind of hermaphrodites. For though Galen do favour the opinion, that the distinctive parts of sexes are only different in position, that is, inversion or protrusion, yet will this hardly be made out from the anatomy of those parts; the testicles being so seated in the female, that they admit not of protrusion, and the neck of the matrix wanting those parts which are discoverable in the organ of virility.

The second, and most received acception is, that hares are male and female by conjunction of both sexes, and such as are found in mankind, poetically called hermaphrodites; supposed to be formed from the equality, or *non victorie* of either seed; carrying about them the parts of man and woman,

[2] *sex.*] Why may not the sex *seem* to change in hares rather than in men? Frequent storyes wee have of some taken for maydes till ripe age or marriage have discovered the instruments of the male to have been but hidden.—*Wr.*

although with great variety in perfection, site, and ability, not only as Aristotle conceived, with a constant impotency in one, but as later observers affirm, sometimes with ability of either venery. And therefore the providence of some laws have thought good, that at the years of maturity they should elect one sex, and the errors in the other should suffer a severer punishment. Whereby, endeavouring to prevent incontinency, they unawares enjoined perpetual chastity; for being executive in both parts, and confined unto one, they restrained a natural power, and ordained a partial virginity. Plato, and some of the rabbins, proceeded higher, who conceived the first man an hermaphrodite; and Marcus Leo, the learned Jew, in some sense hath allowed it; affirming that Adam in one *suppositum*, without division, contained both male and female. And therefore, whereas it is said in the text, that "God created man in his own image, in the image of God created he him, male and female created he them:" applying the singular and plural unto Adam, it might denote, that in one substance, and in himself he included both sexes, which was after divided, and the female called woman. The opinion of Aristotle extendeth farther, from whose assertion all men should be hermaphrodites; for affirming that women do not spermatize, and confer a place or receptacle rather than essential principles of generation, he deductively includes both sexes in mankind; for from the father proceed not only males and females, but from him also must hermaphroditical and masculo-feminine generations be derived, and a commixion of both sexes arise from the seed of one. But the schoolmen have dealt with that sex more hardly than any other; who, though they have not much disputed their generation, yet have they controverted their resurrection, and raised a query, whether any at the last day should arise in the sex of women; as may be observed in the supplement of Aquinas.

Now, as we must acknowledge this androgynal* condition in man, so can we not deny the like doth happen in beasts. Thus do we read in Pliny, that Nero's chariot was drawn by

* Consisting of man and woman.

four hermaphroditical mares; and Cardan affirms he also beheld one at Antwerp. And thus may we also concede, that hares have been of both sexes, and some have ocularly confirmed it; but that the whole species or kind should be bisexous or double-sexed, we cannot affirm, who have found the parts of male and female respectively distinct and single in any wherein we have enquired; and the like success had Bacchinus in such as he dissected.* And whereas it is conceived, that being an harmless animal, and delectable food unto man, nature hath made them with double sexes, that actively and passively performing, they might more numerously increase, we forget an higher providence of nature whereby she especially promotes the multiplication of hares, which is by superfetation; that is, a conception upon a conception, or an improvement of a second fruit before the first be excluded; preventing hereby the usual intermission and vacant time of generation, which is very common and frequently observable in hares, mentioned long ago by Aristotle, Herodotus, and Pliny; and we have often observed, that after the first cast, there remain successive conceptions, and other younglings very immature, and far from their term of exclusion.

Nor need any man to question this in hares, for the same we observe doth sometime happen in women: for although it be true, that upon conception the inward orifice of the matrix exactly closeth, so that it commonly admitteth nothing after, yet falleth it out sometime, that in the act of coition, the avidity of that part dilateth itself, and receiveth a second burden; which if it happen to be near in time unto the first, they do commonly both proceed unto perfection, and have legitimate exclusions, periodically succeeding each other: but if the superfetation be made with considerable intermismission, the latter most commonly proves abortive; for the first being confirmed, engrosseth the aliment from the other. However, therefore, the project of Julia seem very plausible, and that way infallible, when she received not her passengers before she had taken in her lading, yet was there a fallibility

* *Bacch. de Hermaphroditis.*

therein; nor indeed any absolute security in the policy of adultery after conception: for the matrix (which some have called another animal within us, and which is not subjected unto the law of our will,) after reception of its proper tenant, may yet receive a strange and spurious inmate: as is confirmable by many examples in Pliny; by Larissæa in *Hippocrates*, and that merry one in Plautus urged also by Aristotle; that is, of Iphicles and Hercules, the one begat by Jupiter, the other by Amphitryon upon Alcmæna; as also in those superconceptions, where one child was like the father, the other like the adulterer; the one favoured the servant, the other resembled the master.

Now the grounds that begat, or much promoted the opinion of a double sex in hares, might be some little bags or tumours, at first glance representing stones or testicles, to be found in both sexes about the parts of generation; which men observing in either sex, were induced to believe a masculine sex in both. But to speak properly, these are no testicles or parts official unto generation, but glandulous substances that seem to hold the nature of emunctories. For herein may be perceived slender perforations, at which may be expressed a black and fæculent matter. If therefore from these, we shall conceive a mixtion of sexes in hares, with fairer reason we may conclude it in beavers; whereof both sexes contain a double bag or tumour in the groin, commonly called the cod of castor, as we have delivered before.

Another ground were certain holes or cavities observable about the siege; which being perceived in males, made some conceive there might be also a feminine nature in them. And upon this very ground, the same opinion hath passed upon the hyæna, and is declared by Aristotle, and thus translated by Scaliger; *Quòd autem aiunt utriusque sexus habere genitalia, falsum est; quod videtur esse fœmineum sub cauda, est simile figurâ fœminino, verùm pervium non est;* and thus is it also in hares, in whom these holes, although they seem to make a deep cavity, yet do they not perforate the skin, nor hold a community with any part of generation; but were (as Pliny delivereth) esteemed the

marks of their age, the number of those deciding their number of years. In which opinion what truth there is we shall not contend; for if in other animals there be authentic notations, if the characters of years be found in the horns of cows, or in the antlers of deer; if we conjecture the age of horses from joints in their docks, and undeniably presume it from their teeth, we cannot affirm, there is in this conceit any affront unto nature; although, whoever enquireth shall find no assurance therein.

The last foundation was retromingency or pissing backward; for men observing both sexes to urine backward, or aversely between their legs, they might conceive there was a feminine part in both; wherein they are deceived by the ignorance of the just and proper site of the pizzle, or part designed unto the excretion of urine; which in the hare holds not the common position, but is aversely seated, and in its distention inclines unto the coccyx or scut. Now from the nature of this position, there ensueth a necessity of retrocopulation,[3] which also promoteth the conceit: for some observing them to couple without ascension, have not been able to judge of male or female, or to determine the proper sex in either. And to speak generally, this way of copulation is not appropriate unto hares, nor is there one, but many ways of coition, according to divers shapes and different conformations. For some couple laterally or sidewise, as worms: some circularly or by complication, as serpents: some pronely, that is, by contaction of the ventral parts in both, as apes, porcupines, hedgehogs, and such as are termed *mollia*, as the cuttle-fish and the purple; some mixtly, that is, the male ascending the female, or by application of the ventral parts of the one, unto the postick parts of the other, as most quadrupeds: some aversely, as all crustaceous animals, lobsters, shrimps, and crevises, and also retromingents, as panthers, tigers and hares.[4] This is the constant law of their coition, this they observe and transgress not: only the vitiosity of man hath acted the varieties hereof; nor content

[3] *retrocopulation.*] Which is true in lions alsoe, and partlye in dogs.—*Wr.*

[4] *hares.*] Hares and lions: which I sawe at the tower, and remember itt is specified expresly by Aristotle of them. —*Wr.*

with a digression from sex or species, hath in his own kind run through the anomalies of venery; and been so bold, not only to act, but represent to view, the irregular ways of lust.

CHAPTER XVIII.

That Moles are blind.

THAT moles are blind and have no eyes,[5] though a common opinion, is received with much variety; some affirming only they have no sight, as Oppianus, the proverb *talpa cæcior*, and the word σπαλαχία, or *talpitas*, which in Hesychius is made the same with *cæcitas*; some that they have eyes, but no sight, as the text of Aristotle seems to apply; some neither eyes nor sight, as Albertus, Pliny, and the vulgar opinion; some both eyes and sight, as Scaliger, Aldrovandus, and some others. Of which opinions, the last, with some restriction, is most consonant unto truth: for that they have eyes in their head, is manifested unto any that wants them not in his own; and are discoverable, not only in old ones, but as we have observed in young and naked conceptions, taken out of the belly of the dam. And he that exactly enquires into

5 *That moles are blind, &c.*] The eyes of the mole are so extremely minute and so perfectly hid in its hair, that it is not wonderful if careless and casual observers have pronounced it blind.—Still less is it wonderful, that so absurd a personage as Alexander Ross, should have declared them to be but "forms of eyes," given by nature "rather for ornament than use; as wings are given to the ostrich, which never flies, and a long tail to the rat, which serves for no other use but to be catched sometimes by it!"—*Arc.* 151.

"It appears," however, observe the editors of *Cuvier's Animal Kingdom*, "that this animal was not known to the ancients, who have been very wrongfully accused of having fallen into the gross error of supposing that the mole had no eyes. Aristotle, it is true, in two places of his *History of Animals*, repeats this assertion. But the researches of modern times have ascertained that this illustrious naturalist was perfectly right in refusing the organs of vision to the mole of his native country, to the σκαλαξ or ἀσκαλαξ, of ancient Greece. There does in fact, exist, in that country, a little subterraneous animal totally deprived of sight: naturalists have only recently become acquainted with it, and have designated it under the appellation of the *rat-mole*. They have been obliged to confess, after many ages of injustice towards the ancients, that these last had truth altogether on their side, with regard to the mole known in Greece, and had correctly observed, that this animal was not only completely blind, but did not possess even *the smallest* rudiment of an external eye."—Vol. ii. p. 197.

the cavity of their cranies, may perhaps discover some propagation of nerves communicated unto these parts. But that the humours, together with their coats, are also distinct, (though Galen seem to affirm it) transcendeth our discovery; for separating these little orbs, and including them in magnifying glasses, we discerned no more than Aristotle mentions, τῶν ὀφθαλμῶν μέλαινα, that is, a black humour, nor any more if they be broken. That therefore they have eyes, we must of necessity affirm; but that they be comparatively incomplete, we need not to deny: so Galen affirms the parts of generation in women are imperfect, in respect of those of men, as the eyes of moles in regard of other animals: so Aristotle terms them πηρουμένους, which Gaza translates *oblæsos*, and Scaliger by a word of imperfection, *inchoatos*.

Now as that they have eyes is manifest unto sense; so that they have sight, not incongrous unto reason; if we call not in question the providence of this provision, that is, to assign the organs, and yet deny the office; to grant them eyes, and withhold all manner of vision. For as the inference is fair, affirmatively deduced from the action to the organ, that they have eyes because they see; so is it also from the organ to the action, that they have eyes, therefore some sight designed, if we take the intention of nature in every species, and except the casual impediment, or morbosities in individuals. But as their eyes are more imperfect than others, so do we conceive of their sight or act of vision, for they will run against things, and huddling forwards fall from high places. So that they are not blind, nor yet distinctly see; there is in them no cecity, yet more than a cecutiency; they have sight enough to discern the light, though not perhaps to distinguish of objects or colours; so are they not exactly blind, for light is one object of vision. And this (as Scaliger observeth) might be as full a sight as nature first intended, for living in darkness under the earth, they had no further need of eyes than to avoid the light; and to be sensible whenever they lost that darkness of earth, which was their natural confinement. And therefore, however translators do render the word of Aristotle or Galen, that is *imperfectos*, *oblæsos*, or *inchoatos*, it is not much considerable; for their eyes are

sufficiently begun to finish this action, and competently perfect for this imperfect vision.

And lastly, although they had neither eyes nor sight, yet could they not be termed blind. For blindness being a private term unto sight,[6] this appellation is not admittible in propriety of speech, and will overthrow the doctrine of privations; which presuppose positive forms or habits, and are not indefinite negations, denying in all subjects, but such alone wherein the positive habits are in their proper nature, and placed without repugnancy. So do we improperly say a mole is blind, if we deny it the organs or a capacity of vision from its created nature; so when the text of John had said, that person was blind from his nativity, whose cecity our Saviour cured, it was not warrantable in Nonnus to say he had no eyes at all, as in the judgment of Heinsius, he describeth in his paraphrase; and as some ancient fathers affirm, that by this miracle they were created in him. And so though the sense may be accepted, that proverb must be candidly interpreted, which maketh fishes mute; and calls them silent which have no voice in nature.

Now this conceit is erected upon a misapprehension or mistake in the symptoms of vision; men confounding abolishment, diminution and depravement, and naming that an abolition of sight, which indeed is but an abatement. For if vision be abolished, it is called *cæcitas*, or blindness; if depraved, and receive its objects erroneously, hallucination; if diminished, *hebetudo visus*, *caligatio*, or dimness. Now instead of a diminution or imperfect vision in the mole, we affirm an abolition or total privation; instead of a caligation or dimness, we conclude a cecity or blindness. Which hath been frequently inferred concerning other animals. So some affirm the water-rat is blind, so Sammonicus and Nicander do call the *mus araneus*, the shrew or ranney,[7] blind. And because darkness was before light, the Egyptians worshipped the same. So are *cæciliæ* or slow-worms accounted blind:[8]

[6] *a private term unto sight.*] "A term expressing privation of sight."

[7] *ranney.*] This is the very word, *araneus*; castinge away the first *a*, and turning the Latine termination of *eus* into our English form.—*Wr.*

[8] *So some affirm, &c.*] Erroneously.—Neither the water-rat, the shrew, nor the slow-worm is blind. The eyes of the former are very small, and (especial-

andthe like we affirm proverbially of the beetle; although their eyes be evident, and they will fly against lights, like many other insects; and though also Aristotle determines, that the eyes are apparent in all flying insects, though other senses be obscure, and not preceptible at all. And if from a diminution we may infer a total privation, or affirm that other animals are blind which do not acutely see, or comparatively unto others, we shall condemn unto blindness many not so esteemed; for such as have corneous or horny eyes, as lobsters and crustaceous animals, are generally dim-sighted; all insects that have *antennæ*, or long horns to feel out their way, as butterflies and locusts; or their fore-legs so disposed, that they much advance before their heads, as may be observed in spiders; and if the eagle were judge, we might be blind ourselves. The expression therefore of Scripture in the story of Jacob, is surely without circumspection: "And it came to pass, when Jacob was old and his eyes were dim," *quando caligarunt oculi*, saith Jerome and Tremellius, which are expressions of diminution, and not of absolute privation.

Other concerns there are of moles, which, though not commonly opinioned, are not commonly enough considered: as the peculiar formation of their feet, the slender *ossa jugalia*, and dogteeth, and how hard it is to keep them alive out of the earth. As also the ferity and voracity of these animals; for though they be contented with roots, and stringy parts of plants, or worms under ground, yet when they are above it, they will sometimes tear and eat one another, and in a large glass wherein a mole, a toad, and a viper were inclosed, we have known the mole to dispatch them, and to devour a good part of them both.[9]

ly in the shrew) much concealed by fur. Bewick says, that the water-shrew (*sorex fodiens*) is called in Lincolnshire, the *blind mouse*. The slow-worm is more commonly called the *blind-worm*, *anguis fragilis*.

[9] *Other concerns, &c.*] This paragraph first added in 6th edition.

CHAPTER XIX.

That Lampries have many eyes.

WHETHER lampries have nine eyes, as is received, we durst refer it unto Polyphemus, who had but one to judge it. An error concerning eyes, occasioned by the error of eyes; deduced from the appearance of divers cavities or holes on either side,[1] which some call eyes that carelessly behold them; and is not only refutable by experience, but also repugnant unto reason. For, beside the monstrosity they fasten unto nature, in contriving many eyes, who hath made but two unto any animal, that is, one of each side, according to the division of the brain; it were a superfluous inartificial act to place and settle so many in one plane; for the two extremes would sufficiently perform the office of sight without the help of the intermediate eyes, and behold as much as all seven joined together. For the visible base of the object would be defined by these two; and the middle eyes, although they behold the same thing, yet could they not behold so much thereof as these; so were it no advantage unto man to have a third eye between those two he hath already; and the fiction of Argus seems more reasonable than this; for though he had many eyes, yet were they placed in circumference and positions of advantage, and so are they placed in several lines in spiders.

Again, these cavities which men call eyes are seated out of the head, and where the gills of other fish are placed; containing no organs of sight, nor having any communication with the brain. Now all sense proceeding from the brain, and that being placed (as Galen observeth) in the upper part of the body, for the fitter situation of the eyes, and con-

[1] *holes on either side.*] These are the bronchial apertures, of which the lamprey has seven on each side.—It has two eyes; but it is remarkable that there are no *holes* in the skin, but only transparent round spots, over the eyes.

veniency required unto sight; it is not reasonable to imagine that they are any where else, or deserve that name which are seated in other parts. And therefore, we relinquish as fabulous what is delivered of *sternophthalmi*, or men with eyes in their breast; and when it is said by Solomon, "A wise man's eyes are in his head," it is to be taken in a second sense, and affordeth no objection. True it is, that the eyes of animals are seated with some difference, but in sanguinous animals in the head, and that more forward than the ear or hole of hearing. In quadrupeds, in regard of the figure of their heads, they are placed at some distance; in latirostrous and flat-billed birds they are more laterally seated; and therefore, when they look intently they turn one eye upon the object; and can convert their heads to see before and behind, and to behold two opposite points at once. But at a more easy distance are they situated in man, and in the same circumference with the ear; for if one foot of the compass be placed upon the crown, a circle described thereby will intersect, or pass over both the ears.

The error in this conceit consists in the ignorance of these cavities, and their proper use in nature; for this is a particular disposure of parts, and a peculiar conformation whereby these holes and sluices supply the defect of gills, and are assisted by the conduit in the head; for, like cetaceous animals and whales, the lamprey hath a *fistula*, spout or pipe at the back part of the head, whereat it spurts out water. Nor is it only singular in this formation, but also in many other; as in defect of bones, whereof it hath not one, and for the spine or backbone, a cartilaginous substance without any spondyles, processes or protuberance whatsoever. As also in the provision which nature hath made for the heart; which in this animal is very strangely secured, and lies immured in a cartilage or gristly substance. And lastly, in the colour of of the liver; which is in the male of an excellent grass-green, but of a deeper colour in the female, and will communicate a fresh and durable verdure.

CHAPTER XX.

That Snails have two eyes.

WHETHER snails have eyes some learned men have doubted.[2] For Scaliger terms them but imitations of eyes, and Aristotle upon consequence denieth them, when he affirms that testaceous animals have no eyes.[3] But this now seems sufficiently asserted by the help of exquisite glasses, which discover those black and atramentous spots or globules to be their eyes.[4]

That they have two eyes is the common opinion; but if they have two eyes, we may grant them to have no less than four, that is, two in the larger extensions above, and two in

2 *Whether Snails, &c.*] The snayle hath but 3 senses, that is, the touch, the smell, and the tast; he sees not, he hears not. The touch is principally in his hornes; the smel and taste in his mouth, in which I found he hath a little black toung, not bigger then a hair, with which he frets herbes, bread, and all things that he fastens upon for foode, as I once made a visible and certaine experiment.—*Br.*

3 *Aristotle, &c.*] Mr. E. W. Brayley, jun. in a very elaborate and highly interesting paper, in the second volume of the *Zoological Journal*, has very successfully advocated this opinion of the great father of zoology; and after detailing the various opinions (or rather enquiries) of the most able modern naturalists, he concludes by stating his opinion that Aristotle was right in believing that *all* the testaceous mollusca are without the organ and sense of sight, and that the feelers of snails are only organs endued with the most delicate sense of touch and feeling. In a note, however, Mr. Brayley suggests that as they are certainly capable of conveying to the *sensorium* a perception of those *vibrations of air*, which impart to more perfect animals the sense of *sound*, so they may also "convey a perception of those *undulations of the luminiferous ether*, which, (adopting the Huygenian undulatory theory of light, as revived and explained by Dr. T. Young,) enable those animals which possess true eyes to enjoy the sense of *vision!*"

4 *But this now seems, &c.*] This sentence was substituted, in the 6th edition, for the following passage. "And for my own part after much inquiry, I am not satisfied that these are eyes, or that those black and atramentous spots which seem to represent them are any ocular realities; for if any object be presented unto them, they will sometimes seem to decline it, and sometimes run against it; if also these black extremities, or presumed eyes be clipped off, they will notwithstanding make use of their protrusions or horns, and poke out their way as before: again, if they were eyes or instruments of vision, they would have their originals in the head, and from thence derive their motive and optic organs, but their roots and first extremities are seated low upon the sides of the back, as may be perceived in the whiter sort of snails when they retract them."

the shorter and lesser horns below; and this number may be allowed in these inferior and exsanguinous animals,[5] since we may observe the articulate and latticed eyes in flies, and nine in some spiders: and in the great phalangium spider of America, we plainly number eight.

But in sanguineous animals, quadrupeds, bipeds, or man, no such number can be regularly verified, or multiplicity of eyes confirmed; and therefore what hath been under this kind delivered, concerning the plurality, paucity or anomalous situation of eyes, is either monstrous, fabulous, or under things never seen, includes good sense or meaning. And so may we receive the figment of Argus, who was an hieroglyphick of heaven, in those centuries of eyes expressing the stars, and their alternate wakings, the vicissitude of day and night. Which strictly taken cannot be admitted, for the subject of sleep is not the eye, but the common sense, which once asleep, all eyes must be at rest. And therefore what

[5] *And this number may be allowed, &c.*] This remark, in the 6th edition, supplies the place of the following:—the succeeding paragraph, which also occurs in all the earlier editions, was omitted in the 6th—"which will be monstrous and beyond the affirmation of any.

"Now the reason why we name these black strings eyes, is because we know not what to call them else, and understand not the proper use of that part, which indeed is very obscure, and not delivered by any, but may probably be said to assist the protrusion, and retraction of their horns, which being a weak and hollow body, require some inward establishment to confirm the length of their advancement, which we observe they cannot extend without the concurrence hereof; for if with your finger you apprehend the top of the horn, and draw out this black and membranous emission, the horn will be excluded no more; but if you clip off the extremity, or only singe the top thereof with *aqua fortis*, or other corrosive water, leaving a considerable part behind, they will nevertheless exclude the horns, and therefore explorate their way as before, and indeed the exact sense of these extremities is very remarkable, for if you dip a pen in aqua fortis, oil of vitriol, or turpentine, and present it towards these points, they will at a reasonable distance decline the acrimony thereof, retiring or distorting them to avoid it; and this they will nimbly perform, if objected to the extremes, but slowly or not at all if approached unto their roots."

The various readings given in this and the preceding note, prove that the earlier opinions of Sir Thomas were more in conformity with the sagacious assertion of the great naturalist of antiquity,—And, I may add, with the conclusions which the investigation of Sir Everard Home, and other distinguished naturalists, have recently led them to form. The paper by Mr. Brayley, referred to in note 3, p. 479, will be found to contain a detailed and very interesting account of those investigations.

Sir E. Home has pointed out the mistake of Swammerdam, whose microscopic examinations led him to consider the black *rete mucosum*, at the point of the horn, as *nigrum pigmentum*, and a pellucid part which he found there, as the *cornea*. Sir Thomas was probably misled by similar investigations, or he might have seen Swammerdam's work, which appeared in Dutch some years before the sixth edition of the *Vulgar Errors*.

is delivered as an emblem of vigilancy, that the hare and lion do sleep with one eye open, doth not evince they are any more awake than if they were both closed. For the open eye beholds in sleep no more than that which is closed, and no more one eye in them than two in other animals that sleep with both open, as some by disease, and others naturally, which have no eye-lids at all.

As for Polyphemus, although the story be fabulous, the monstrosity is not impossible. For the act of vision may be performed with one eye, and in the deception and fallacy of sight, hath this advantage of two, that it beholds not objects double,[6] or sees two things for one. For this doth happen when the axis of the visive cones, diffused from the object, fall not upon the same plane, but that which is conveyed into one eye, is more depressed or elevated than that which enters the other. So if, beholding a candle, we protrude either upward or downward the pupil of one eye, the object will appear double; but if we shut the other eye, and behold it with one, it will then appear but single, and if we abduce the eye unto either corner, the object will not duplicate, for in that position the axis of the cones remains in the same plane, as is demonstrated in the optics, and delivered by Galen, in his tenth, *De usu partium.*

Relations also there are of men that could make themselves invisible, which belongs not to this discourse, but may serve as notable expressions of wise and prudent men, who so contrive their affairs, that although their actions be manifest, their designs are not discoverable. In this acception there is nothing left of doubt, and Giges ring remaineth still amongst us, for vulgar eyes behold no more of wise men than doth the sun; they may discover their exterior and outward ways, but their interior and inward pieces he only sees, that sees into their beings.

6 *It beholds not objects double.*] In connection with this very curious question of single vision with two eyes, Dr. Wollaston read a short paper to the R. S. in February, 1824, on *semi-decusation* of the optic nerves. A subject to which he had been led by a singular species of blindness which had affected him—in which he had suffered a temporary loss *of sight on the left side only of both eyes.* See *Quarterly Journal, vol. xvii, p. 227.*

CHAPTER XXI.

That the Chameleon lives only upon air.

CONCERNING the Chameleon[7] there generally passeth an opinion that it liveth only upon air, and is sustained by no other aliment. Thus much is in plain terms affirmed by Solinus, Pliny, and others, and by this periphrasis is the same described by Ovid.[8] All which notwithstanding, upon enquiry I find the assertion mainly controvertible, and very much to fail in the three inducements of belief.

And first for its verity, although asserted by some, and traditionally delivered by others, yet is it very questionable. For beside Ælian, who is seldom defective in these accounts, Aristotle, distinctly treating hereof, hath made no mention of this remarkable propriety, which either suspecting its verity, or presuming its falsity, he surely omitted; for that he remained ignorant of this account, it is not easily conceivable, it being the common opinion, and generally received by all men. Some have positively denied it, as Augustinus, Niphus, Stobæus, Dalechampius, Fortunius Licetus, with many more;

[7] *Concerning the Chameleon, &c.*] It is singular that Sir Thomas has not mentioned the vulgar opinion that this reptile undergoes frequent changes of colour according to that of the bodies near it. He has assigned *some* probable grounds for its being supposed to feed on air, viz. its powers of abstinence and its faculty of self-inflation. It lives on insects, which it catches by means of its long gluey tongue, and crushes between its jaws. It has been ascertained by careful experiment that the chameleon can live without eating for four months. It can inflate, not only its lungs but its whole body, including even the feet and tail. The frequent variations of colour observed in the chameleon are by no means determined by those of surrounding objects. They depend on the volition of the animal, or the state of its feelings, on its good or bad health, and are, besides, subordinate to climate, age, and sex. A. Ross so resolutely withstands the Doctor's arguments against the common opinion, as even to assert that flies are eaten by the chameleon, "rather out of wantonness or for physic". He adverts indeed to the fact, only as giving a reason for the animal being provided with digestive organs; but says that the slime on the tongue is not intended for catching the flies, but for destroying serpents, on whose approach the chameleon drops some of the slime on the head of the serpent, which presently dies.

[8] *Ovid.*] See *Metam.* l. xv, fab. 4, l. 411.

others have experimentally refuted it, as namely Johannes Landius, who in the relation of Scaliger, observed a chameleon to lick up a fly from his breast. But Bellonius* hath been more satisfactorily experimental, not only affirming they feed on flies, caterpillars, beetles, and other insects, but upon exenteration he found these animals in their bellies; whereto we might also add the experimental decisions of the worthy Peireschius and learned Emanuel Tizzanius, in that chameleon which had been often observed to drink water, and delight to feed on meal-worms. And although we have not had the advantage of our own observation, yet we have received the like confirmation from many ocular spectators.

2. As touching the verisimility or probable truth of this relation, several reasons there are which seem to overthrow it. For first, there are found in this animal, the guts, the stomach, and other parts official unto nutrition; which, were its aliment the empty reception of air, their provisions had been superfluous. Now the wisdom of nature abhorring superfluities, and effecting nothing in vain, unto the intention of these operations, respectively contriveth the organs, and therefore where we find such instruments we may with strictness expect their actions, and where we discover them not, we may with safety conclude the non-intention of their operations. So when we perceive that bats have teats, it is not unreasonable to infer they suckle their younglings with milk; but whereas no other flying animal hath these parts, we cannot from them expect a viviparous exclusion, but either a generation of eggs, or some vermiparous separation, whose navel is within itself at first, and its nutrition after not connexedly depending of its original.

Again, nature is so far from leaving any one part without its proper action, that she oft-times imposeth two or three labours upon one, so the pizzle in animals is both official unto urine and to generation; but the first and primary use is generation, for some creatures enjoy that part which urine not. So the nostrils are useful both for respiration and smelling; but the principle use is smelling, for many have nostrils

* *Comment in Ocell. Lucan.*

which have no lungs, as fishes, but none have lungs or respiration, which have not some shew or some analogy of nostrils. Thus we perceive the providence of nature, that is, the wisdom of God, which disposeth of no part in vain, and some parts unto two or three uses, will not provide any without the execution of its proper office, nor where there is no digestion to be made, make any parts inservient to that intention.

Beside the remarkable teeth, the tongue of this animal is a second argument to overthrow this airy nutrication: and that not only in its proper nature, but also its peculiar figure. For of this part, properly taken, there are two ends; that is, the formation of the voice and the execution of taste; for the voice, it can have no office in chameleons, for they are mute animals; as, beside fishes, are most other sorts of lizards.

As for their taste, if their nutriment be air, neither can it be an instrument thereof; for the body of that element is ingustible, void of all sapidity, and, without any action of the tongue, is by the rough artery or weazand conducted into the lungs. And therefore Pliny much forgets the strictness of his assertion, when he alloweth excrements unto that animal, that feedeth only upon air; which notwithstanding, with the urine of an ass, he commends as a magical medicine upon our enemies.

The figure of the tongue seems also to overthrow the presumption of this aliment, which, according to exact delineation, is in this animal peculiar, and seemeth contrived for prey. For in so little a creature it is at the least a palm long, and being itself very slow in motion, hath in this part a very great agility; withal its food being flies, and such as suddenly escape, it hath in the tongue a mucous and slimy extremity, whereby upon a sudden emission it inviscates and tangleth those insects. And therefore some have thought its name not unsuitable unto its nature; the nomination in Greek * is a little lion; not so much for the resemblance of shape, as affinity of condition; that is, for vigilancy in its prey, and sudden rapacity thereof, which it performeth not like the lion with its teeth, but a sudden and unexpected

* χαμαιλέων.

ejaculation of the tongue. This exposition is favoured by some, especially the old gloss upon Leviticus, whereby in the translation of Jerome and the Septuagint this animal is forbidden; whatever it be, it seems as reasonable as that of Isidore, who derives this name, *à camelo et leone*, as presuming herein resemblance with a camel.[9]

3. As for the possibility hereof, it also is not unquestionable, and wise men are of opinion the bodies of animals cannot receive a proper aliment from air: for, beside that, taste being (as Aristotle terms it) a kind of touch, it is required the aliment should be tangible and fall under the palpable affections of touch; beside also that there is some sapor in all aliments, as being to be distinguished and judged by the gust, which cannot be admitted in air; beside these, I say, if we consider the nature of aliment, and the proper use of air in respiration, it will very hardly fall under the name hereof, or properly attain the act of nutrication.

And first, concerning its nature, to make a perfect nutrition into the body nourished, there is required a transmutation of the nutriment. Now where this conversion or aggeneration[1] is made, there is also required in the aliment a familiarity of matter, and such a community or vicinity unto a living nature, as by one act of the soul may be converted into the body of the living, and enjoy one common soul: which cannot be effected by air, it concurring only with our flesh in common principles, which are at the largest distance from life, and common also unto inanimated constitutions. And therefore, when it is said by Fernelius, and asserted by

[9] *camel.*] In the first edition he goes on thus:—"For this derivation offendeth the rules of etymology, wherein indeed the notation of names should be orthographical, not exchanging diphthongs for vowels, or converting consonants into each other." But notwithstanding this observation, he has spelled the word *camelcon* in every edition. Dean Wren criticised the spelling, and noticed its inconsistency with the above remark of that author, who was probably induced, in every edition subsequent to the first, to suppress the observation, lest he might seem to condemn himself.

[1] *aggeneration.*] Generic assimilation. Johnson defines this, "the state of growing or uniting to another body." Webster defines it, "the state of growing to another." Both definitions are erroneous, or liable at least to be misunderstood. They would apply to the attachment of parasitic plants. Certainly they do not express the signification in which the word is used in the present passage. It is here meant to express the transmutation of that which is eaten, from its own nature, into that of the animal receiving it. It becomes *assimilated, generically*, to the nature of that animal.

divers others, that we are only nourished by living bodies, and such as are some way proceeding from them, that is, the fruits, effects, parts, or seeds thereof, they have laid out an object very agreeable unto assimilation; for these indeed are fit to receive a quick and immediate conversion, as holding some community with ourselves, and containing approximate dispositions unto animation.

Secondly, (as is argued by Aristotle against the Pythagoreans) whatsoever properly nourisheth before its assimilation, by the action of natural heat it receiveth a corpulency or incrassation progressional unto its conversion; which notwithstanding, cannot be effected upon air, for the action of heat doth not condense but rarify that body, and by attenuation disposeth it for expulsion rather than for nutrition.

Thirdly, (which is the argument of Hippocrates,) all aliment received into the body, must be therein a considerable space retained, and not immediately expelled. Now air, but momentally remaining in our bodies, it hath no proportionable space for its conversion, not only of length enough to refrigerate the heart, which having once performed, lest being itself heated again it should suffocate that part, it maketh no stay, but hasteth back the same way it passed in.

Fourthly, the use of air attracted by the lungs, and without which there is no durable continuation in life, is not the nutrition of parts, but the contemperation and ventilation of that fire always maintained in the forge of life; whereby, although in some manner it concurreth unto nutrition, yet can it not receive the proper name of nutriment. And therefore by Hippocrates* it is termed *alimentum non alimentum*, a nourishment and no nourishment. That is, in a large acception, but not in propriety of language; conserving the body, not nourishing the same, nor repairing it by assimilation, but preserving it by ventilation; for thereby the natural flame is preserved from extinction, and so the *individuum* supported in some way like nutrition.

And though the air so entereth the lungs, that by its nitrous spirit it doth affect the heart and several ways qualify the blood; and though it be also admitted into other parts,

* *De Alimento.*

even by the meat we chew, yet that it affordeth a proper nutriment alone, is not easily made out.[2]

Again, some are so far from affirming the air to afford any nutriment, that they plainly deny it to be any element, or that it entereth into mixed bodies as any principle in their compositions, but performeth other offices in the universe; as to fill all vacuities about the earth or beneath it, to convey the heat of the sun, to maintain fires and flames, to serve for the flight of volatiles, respiration of breathing animals, and refrigeration of others. And although we receive it as an element, yet, since the transmutation of elements and simple bodies is not beyond great question; since also it is no easy matter to demonstrate that air is so much as convertible into water; how transmutable it is into flesh, may be of deeper doubt.[3]

And although the air attracted may be conceived to nourish the invisible flame of life, inasmuch as common and culinary flames are nourished by the air about them, we make some doubt whether air is the pabulous supply of fire, much less that flame is properly air kindled. And the same before us hath been denied by the Lord of Verulam, in his tract of *Life and Death;* and also by Dr. Jordan, in his book of mineral waters. For that which substantially maintaineth the fire is the combustible matter in the kindled body, and not the ambient air, which affordeth exhalation to its fuliginous atoms, nor that which causeth the flame properly to be termed air, but rather, as he expresseth it, the accension of fuliginous exhalations, which contain an unctuosity in them, and arise from the matter of fuel; which opinion will salve many doubts, whereof the common conceit affordeth no solution.

As first, how fire is stricken out of flints? that is, not by kindling the air from the collision of two hard bodies; for then diamonds should do the like better than flints; but rather from sulphureous,[4] inflamed, and even vitrified efflu-

[2] *And though, &c.*] This paragraph was altered in 6th edition.

[3] *Again, &c.*] This paragraph first added in 2nd edition.

[4] *sulphureous.*] Itt is manifest to sense, that in the collision of the steele and the flint there is a sulphureous odour, which thoughe but fainte (in regard of the small splinters from whence it comes) yet to an acute and unobstructed braine is plainly perceptible—*Wr.* See note at page 273.

viums and particles, as hath been observed of late. The like, saith Jordan, we observe in canes, and woods [5] that are unctuous and full of oil, which will yield fire [6] by frication or collision, not by kindling the air about them, but the inflammable oil within them. Why the fire goes out without air? that is, because the fuliginous exhalations, wanting evaporation, recoil upon the flame and choke it, as is evident in cupping-glasses, and the artifice of charcoals, where, if the air be altogether excluded, the fire goes out. Why some lamps included in close bodies have burned many hundred years, as that discovered in the sepulchre of Tullia, the sister of Cicero, and that of Olibius many years after, near Padua? because, whatever was their matter, either a preparation of gold or *naptha*, the duration proceeded from the purity of their oil, which yielded no fuliginous exhalations to suffocate the fire; for if air had nourished the flame, it had not continued many minutes, for it would have been spent and wasted by the fire.[7] Why a piece of flax will kindle, although it touch not the flame? because the fire extendeth further than indeed it is visible, being at some distance from the wick, a pellucid and transparent body, and thinner than the air itself. Why metals, in their liquation, although they intensely heat the air above their surface, arise not yet into a flame, nor kindle the air about them? because their sulphur is more fixed, and they emit not inflammable exhalations. And lastly, why a lamp or candle burneth only in the air about it, and inflameth not the air at a distance from it? because the flame extendeth not beyond the inflammable effluence, but closely adheres unto the original of its inflammation; and therefore it only warmeth, not kindleth the air about it. Which notwithstanding it will do, if the ambient air be impregnate with subtile

[5] *saith Jordan, &c.*] Dr. Jordan's observation appears to have been an anticipation of Sir H. Davy's, who having been informed that two pieces of bonnet cane rubbed together produced a faint light, examined the phænomenon, and found that all canes of this kind "when briskly rubbed together, produced sparks of white light. The luminous appearance was much more vivid on collision. When the canes were violently struck together, sparks nearly as vivid as those from the gun-lock were produced." The cause he ascertained to be that the *epidermis* of the cane was composed chiefly of *silica*.—*Br.*

[6] *fire.*] And with the fire a smel as of oylye substance fired.—*Wr.*

[7] *Why some lamps, &c.*] For a curious discussion on these marvellous lamps, see *Ozanam's Philosophical Recreations* by Hutton, vol. i, p. 496.

inflammabilities, and such as are of quick accension, as experiment is made in a close room, upon an evaporation of spirits of wine and camphor; as subterraneous fires do sometimes happen,[8] and as Creusa and Alexander's boy in the bath were set on fire by *nâptha*.

[8] *as subterraneous fires do sometimes happen.*] This remark, and indeed the whole of Browne's enquiries and observations in the two preceding paragraphs, respecting the nature of flame, very naturally remind us of one of the most splendid (because most useful) achievements of modern science—Sir Humphrey Davy's invention of the safety lamp, for the purpose of obviating those "subterraneous" explosions which had previously occurred with destructive frequency, in the working of our collieries.

The causes and character of these terrific explosions, the means used in the early part of the present century to induce the efforts of scientific men to discover a remedy, and the perfect success which attended those of Sir Humphrey for that purpose, form the subject of a detailed and most interesting narrative in the 11th chapter of *Dr. Paris' Life of Sir H. Davy.*

The carburetted hydrogen given out by coal, and found frequently in vast masses in the crevices, or fissures, which are opened in working the mines, forms by combination with atmospheric air that inflammable gas, technically called *fire-damp*. The manner in which this gas explodes, is thus graphically described by Dr. Paris:—"On the approach of a candle, it is in an instant kindled: the expanding fluid drives before it a roaring whirlwind of flaming air, which tears up every thing in its progress, scorching some of the miners to a cinder, and burying others under enormous ruins shaken from the roof; when thundering to the shafts, it converts the mine, as it were, into an enormous piece of artillery, and wastes its fury in a discharge of thick clouds of coal-dust, stones, and timber, together with the limbs and mangled bodies of men and horses."—Vol. ii, p. 63.

A society was established on the 1st of October, 1813, at Bishop-Wearmouth, by Sir Ralph Milbanke, Dr. Gray, (afterwards Bishop of Bristol) and other gentlemen, "for preventing accidents in coal-mines," which obtained the patronage of the Bishop of Durham, the Duke of Northumberland, and other noblemen and gentlemen. This society established a correspondence with others, and at length, through the chairman, Dr. Gray, engaged Sir Humphrey Davy in the investigation. He soon ascertained, by experiment on *fire-damp*, that it is a combination of hydrogen and carbon:—that it will not explode if mixed with less than six times, nor more than fourteen times its volume of atmospheric air;—that an *explosive mixture* of gas, admitted into a vessel having apertures only above and below, *merely enlarges* the light, and then gradually *extinguishes it without* explosion:—that the explosive gas will not explode in a tube less than $\frac{1}{8}$ of an inch in diameter:—and that red hot charcoal *does not explode*, but gives light in the explosive gas. On these principles various lamps were constructed by Sir Humphrey, which were perfectly safe; but their light was extinguished when the air became so polluted with fire-damp as to be explosive. It remained then for him, (as Dr. Paris observes,) after having disarmed the fire-damp of its terror, to enlist it into his service.—"The simple means by which this was effected are as interesting as their results are important. He had previously arrived at the fact, that wire-gauze might be substituted as air-feeders to the lamp, in the place of his tubes or safety canals: but not until the lapse of several weeks, did the happy idea of constructing the lamp entirely of wire-gauze occur to him:—the history of this elaborate enquiry affords a striking proof of the inability of the human mind to apprehend simplicities, without a process of complication, which works as the grappling machinery of truth. His original lamp, with tubes or canals, as already described, was perfectly safe in the most explosive atmosphere, but its light was necessarily extinguished by it; whereas in the wire-gauze cage, the fire-damp itself continues to burn, and thus to afford to the miner a useful light, while he is equally secured from the fatal effects of explosion.

"Nothing now remained but to ascertain the degree of fineness which the

Lastly, the element of air is so far from nourishing the body, that some have questioned the power of water; many conceiving it enters not the body in the power of aliment, or that from thence there proceeds a substantial supply. For beside that some creatures drink not at all; even unto ourselves, and more perfect animals, though many ways assistant thereto, it performs no substantial nutrition, serving for refrigeration, dilution of solid aliment, and its elixation[9] in the stomach; which from thence, as a vehicle, it conveys through less accessible cavities, and so in a rorid substance through the capillary cavities, into every part; which having performed, it is afterward excluded by urine, sweat, and serous separations. And this opinion surely possessed the ancients; for when they so highly commended that water which is suddenly hot and cold, which is without all savour, the lightest, the thinnest, and which will soonest boil beans or peas, they had no consideration of nutrition;[1] whereunto had they had respect, they would have surely commended gross and turbid streams, in whose confusion at least, there might be contained some nutriment; and not jejune or limpid water, nearer the simplicity of its element. Although, I confess, our clearest waters, and such as seem simple unto sense, are much compounded unto reason, as may be observed in the evaporation of large quantities of water, wherein, beside a terreous resi-

wire-gauze ought to possess in order to form a secure barrier against the passage of flame. For this purpose, Davy placed his lighted lamps in a glass receiver, through which there was a current of air which passed into the lamp more or less explosive, and caused it to change rapidly or slowly at pleasure, so as to produce all possible varieties of inflammable and explosive mixtures: and he found that iron wire-gauze, composed of wires from one fortieth to one sixtieth of an inch in diameter, and containing twenty-eight wires, or seven hundred and eighty-four apertures to the inch, was safe under all circumstances, in atmospheres of this kind: and he consequently employed that material in guarding lamps for the coal-mines, where, in January, 1816, they were immediately adopted, and have long been in general use."—Vol. ii, pp. 97-9.

Such is a rapid and very slight sketch of the history of a discovery which, (to use Dr. P's. words,) "whether considered in relation to its scientific importance, or to its great practical value, must be regarded as one of the most splendid triumphs of human genius. It was the fruit of elaborate experiment and close induction: chance, or accident, which comes in for so large a share of the credit of human invention, has no claim to prefer upon this occasion: step by step may he be followed throughout the whole progress of his research, and so obviously does the discovery of each new fact spring from those that preceded it, that we never for a moment lose sight of our philosopher, but keep pace with him during the whole of his enquiry."

[9] *elixation.*] Boiling or stewing.

[1] *nutrition.*] But only of puritye for refreshing the harte.—*Ed.*

dence, some salt is also found, as is also observable in rain water; which appearing pure and empty, is full of seminal principles, and carrieth vital atoms of plants and animals in it, which have not perished in the great circulation of nature; as may be discovered from several insects generated in rain water; from the prevalent fructification of plants thereby; and (beside the real plant of Cornerius *) from vegetable figurations, upon the sides of glasses, so rarely delineated in frosts.[2]

All which considered, severer heads will be apt enough to conceive the opinion of this animal, not much unlike that of the *astomi*, or men without mouths, in Pliny; suitable unto the relation of the mares in Spain, and their subventaneous conceptions from the western wind; and in some way more unreasonable than the figment of Rabican, the famous horse in *Ariosto*, which being conceived by flame and wind, never tasted grass, or fed on any grosser provender than air; for this way of nutrition was answerable unto the principles of his generation. Which being not airy, but gross and seminal in the chameleon, unto its conservation there is required a solid pasture, and a food congenerous unto the principles of its nature.

The grounds of this opinion are many: the first observed by Theophrastus, was the inflation or swelling of the body made in this animal upon inspiration or drawing in its breath; which people observing, have thought it to feed upon air. But this effect is rather occasioned upon the greatness of its lungs, which in this animal are very large, and by their backward situation afford a more observable dilatation; and though their lungs be less, the like inflation is observable in toads, but especially in sentortoises.[3]

A second is the continual hiation or holding open its mouth, which men observing, conceive the intention thereof to receive the aliment of air; but this is also occasioned by the greatness of its lungs; for repletion whereof, not having

* *Zibavius* tom. iv, *Chym.*

[2] *Although, I confess, &c.*] This sentence was first added in 2nd edition.

[3] *but especially in sentortoises.*] These gentry were first mentioned in the 6th edition.

a sufficient or ready supply by its nostrils, it is enforced to dilate and hold open the jaws.

The third is the paucity of blood observed in this animal, scarce at all to be found but in the eye, and about the heart; which defect being observed, inclined some into thoughts, that the air was a sufficient maintenance for these exsanguinous parts. But this defect, or rather paucity of blood, is also agreeable unto many other animals, whose solid nutriment we do not controvert; as may be observed in other sorts of lizards, in frogs, and divers fishes; and therefore an horse-leech will not readily fasten upon every fish; and we do not read of much blood that was drawn from frogs by mice, in that famous battle of Homer.[4]

The last and most common ground which begat or promoted this opinion is, the long continuation hereof without any visible food, which some observing, precipitously conclude they eat not any at all. It cannot be denied it is (if not the most of any) a very abstemious animal, and such as by reason of its frigidity, paucity of blood, and latitancy in the winter (about which time the observations are often made,) will long subsist without a visible sustentation. But a like condition may be also observed in many other animals; for lizards and leeches,[5] as we have made trial, will live some months without sustenance; and we have included snails in glasses all winter, which have returned to feed again in the spring. Now these, notwithstanding, are not conceived to pass all their lives without food: for so to argue is fallacious, and is moreover sufficiently convicted by experience. And therefore probably other relations are of the same verity, which are of the like affinity; as is the conceit of the *rhin-*

[4] *that famous battle of Homer.*] This passage was but a friske of his stile.—*Wr.*

[5] *leeches.*] Leeches are kept by all apothecaryes in glasses of water, without any other nourishment: which can bee little, or none at all. The often change of the water serving for two intentions, and both contrary to the worke of nourishment; viz. first to preserve itt from putrefaction, which is the principal aliment which they sucke from thick and muddye standing waters; and secondly, to cleanse them from that venome, which they had formerlye contracted, which nothing could soe properly or speedily effect as the dailye supply of fresh cleere water; by which consequentially they become the more hungry, and apte to catche holde, and to holde the faster when they are on: evident arguments that from the pure water alone they drew no aliment, but fedd on that store which they had formerlye contracted in putrified standing waters.—*Wr.*

tace in Persia, the *canis levis* of America, and the *manucodiata* or bird of paradise in India.

To assign a reason of this abstinence in animals, or declare how, without a supply, there ensueth no destructive exhaustion, exceedeth the limits and intention of my discourse. Fortunius Licetus, in his excellent tract, *De his qui diu vivunt sine alimento*, hath very ingeniously attempted it; deducing the cause hereof from an equal conformity of natural heat and moisture, at least no considerable exuperancy in either; which concurring in an unactive proportion, the natural heat consumeth not the moisture (whereby ensueth no exhaustion) and the condition of natural moisture is able to resist the slender action of heat, (whereby it needeth no reparation,) and this is evident in snakes, lizards, snails, and divers insects, latitant many months in the year; which being cold creatures, containing a weak heat in a crass or copious humidity, do long subsist without nutrition: for, the activity of the agent being not able to over-master the resistance of the patient, there will ensue no deperdition. And upon the like grounds it is, that cold and phlegmatic bodies, and (as Hippocrates determineth) that old men will best endure fasting. Now the same harmony and stationary constitution, as it happeneth in many species, so doth it fall out sometimes in individuals. For we read of many who have lived long time without aliment; and beside deceits and impostures, there may be veritable relations of some, who without a miracle, and by peculiarity of temper, have far out-fasted Elias. Which notwithstanding, doth not take off the miracle; for that may be miraculously effected in one, which is naturally causable in another. Some naturally living unto an hundred; unto which age others, notwithstanding, could not attain without a miracle.[6]

[6] *Which notwithstanding, &c.*] This sentence first added in 2nd edition.

[6] *miracles.*] The reader will have remarked in the course of this chapter, some false positions and unphilosophical observations, into which the author was led by the ignorance which at that time existed of some of those laws which modern discoveries have established in chemistry and physics; more especially with reference to the components of air, and the nature of combustion.

CHAPTER XXII.

That the Ostrich digesteth iron.

THE common opinion of the Ostrich, Struthiocamelus or Sparrow Camel conceives that it digesteth iron, and this is confirmed by the affirmations of many: besides swarms of others, Rhodiginus in his prelections taketh it for granted, Johannes Langius in his epistles pleadeth experiment for it; the common picture also confirmeth it, which usually describeth this animal with an horseshoe in its mouth. Notwithstanding upon enquiry we find it very questionable, and the negative seems most reasonably entertained, whose verity indeed we do the rather desire, because hereby we shall relieve our ignorance of one occult quality, for in the list thereof it is accounted, and in that notion imperiously obtruded upon us. For my part, although I have had the sight of this animal, I have not had the opportunity of its experiment, but have received great occasion of doubt from learned discourses thereon.

For Aristotle and Oppianus, who have particularly treated hereof, are silent in this singularity, either omitting it as dubious, or as the comment saith, rejecting it as fabulous. Pliny, speaking generally, affirming only the digestion is wonderful in this animal; Ælian delivereth that it digested stones without any mention of iron; Leo Africanus, who lived in those countries wherein they most abound, speaketh diminutively, and but half way into this assertion, *Surdum ac simplex animal est, quicquid invenit, absque delectu, usque ad ferrum devorat;* Fernelius in his second *De Abditis rerum causis*, extenuates it, and Riolanus in his comment thereof postively denies it. Some have experimentally refuted it, as Albertus Magnus, and most plainly Ulysses Aldrovandus, whose words are these, *Ego ferri frusta devorare, dum Tridenti essem, observavi, sed quæ incocta rursus excer-*

neret, that is, "at my being at Trent, I observed the ostrich to swallow iron, but yet to exclude it undigested again."[7]

Now beside experiment, it is in vain to attempt against it by philosophical argument, it being an occult quality, which contemns the law of reason, and defends itself by admitting no reason at all. As for its possibility we shall not at present dispute; nor will we affirm that iron ingested, receiveth in the stomach of the ostrich no alteration at all; but if any such there be, we suspect this effect rather from some way of corrosion than any of digestion; not any liquid reduction or tendence to chylification by the power of natural heat, but rather some attrition from an acid and vitriolous humidity in the stomach, which may absterse and shave the scorious parts thereof. So rusty iron crammed down the throat of a cock, will become terse and clear again in its gizzard. So the counter, which, according to the relation of Amatus, remained a whole year in the body of a youth, and came out much consumed at last, might suffer this diminution rather from sharp and acid humours, than the strength of natural heat, as he supposeth. So silver swallowed and retained for some time in the body will turn black, as if it had been dipped in aqua fortis, or some corrosive water, but lead will remain unaltered, for that metal containeth in it a sweet salt or sugar, whereby it resisteth ordinary corrosion, and will not easily dissolve even in aqua fortis. So when for medical uses we take down the filings of iron or steel, we must not conceive it passeth unaltered from us, for though

7 *and most plainly, &c,*] But though Aldrovandus saw this *once*, "one swallow makes not a summer," says Master Ross, "who fully believes the iron to be digested; he is satisfied that even in that *one* instance the stomach sucki something out of it!" The ostrich is naturally herbivorous; but though vegetable matter constitutes the basis of its food, and though it is often seen pasturing in the South of Africa, it is yet so voracious, and its senses of taste and smell are so obtuse, that it devours animal and mineral substances indiscriminately, until its enormous stomach is completely full. It swallows without any choice, and merely as it were for ballast, wood, stones, grass, iron, copper, gold, lime, or, in fact, any other substance equally hard, indigestible, and deleterious. The powers of digeston in this bird are certainly very great, but their operation is confined to matters of an alimentary character. But copper, far from being converted into nutriment, acts upon its stomach like poison, and nails very frequently pierce its coats and membranes. Vaillant mentions that one of these birds died in consequence of having devoured an immense quantity of quick lime.—*Cuvier. In Loudon's Magazine of Natural History*, No. 6, p. 62, is a relation of an ostrich having been killed by swallowing glass.

the grosser parts be excluded again, yet are the dissoluble parts extracted, whereby it becomes effectual in deoppilations,[8] and therefore for speedier operation we make extinctions, infusions, and the like, whereby we extract the salt and active parts of the medicine, which being in solution, more easily enter the veins. And this is that the chemists mainly drive at in the attempt of their *Aurum Potabile*, that is, to reduce that indigestible substance into such a form as may not be ejected by siege, but enter the cavities, and less accessible parts of the body, without corrosion.

The ground of this conceit is its swallowing down fragments of iron, which men observing, by a froward illation, have therefore conceived it digesteth them, which is an inference not to be admitted, as being a fallacy of the consequent, that is, concluding a position of the consequent, from the position of the antecedent. For many things are swallowed by animals rather for condiment, gust or medicament, than any substantial nutriment. So poultry, and especially the turkey, do of themselves take down stones, and we have found at one time in the gizzard of a turkey no less than seven hundred. Now these rather concur unto digestion, than are themselves digested, for we have found them also in the guts and excrements; but their descent is very slow, for we have given them stones and small pieces of iron, which eighteen days after we have found remaining in the gizzard; and therefore the experiments of Langius and others might be fallible, whilst after the taking they expected it should come down within a day or two after. Thus also we swallow cherry stones, but void them unconcocted, and we usually say they preserve us from surfeit, for being hard bodies they conceive a strong and durable heat in the stomach, and so prevent the crudities of their fruit: and upon the like reason do culinary operators observe, that flesh boils best when the bones are boiled with it. Thus dogs will eat grass, which they digest not; thus camels to make the water sapid, do raise the mud with their feet; thus horses will knable[9] at

[8] *deoppilations.*] Clearing away obstructions.

[9] *knable.*] "Probably to be found no where else," says Johnson, "than in this passage." Very probably; the fact is, that it is a frequent Norfolk vulgarization of the word *nibble*.

walls, pigeons delight in salt stones; rats will gnaw iron, and Aristotle saith the elephant swalloweth stones; and thus may also the ostrich swallow iron, not as his proper aliment, but for the ends above expressed, and even as we observe the like in other animals.

And whether these fragments of iron and hard substances swallowed by the ostrich have not also that use in their stomachs which they have in other birds, that is, in some way to supply the use of teeth, by commolition, grinding and compressing of their proper aliment, upon the action of the strongly conformed muscles of the stomach, as the honoured Dr. Harvey discourseth, may also be considered.[1]

What effect therefore may be expected from the stomach of an ostrich by application alone to further digestion in ours beside the experimental refute of Galen, we refer it unto considerations above alleged. Or whether there be any more credit to be given unto the medicine of Ælian, who affirms, the stones they swallow have a peculiar virtue for the eyes, than that of Hermolaus and Pliny drawn from the urine of this animal,—let them determine who can swallow so strange a transmission of qualities, or believe that any bird or flying animal doth separately and distinctly urine beside the bat.

That therefore an ostrich will swallow and take down iron is easily to be granted; that oftentimes it passes entire away, if we admit of ocular testimony, is not to be denied. And though some experiment may also plead that sometimes they are so altered as not to be found or excluded in any discernable parcels, yet whether this be not effected by some way of corrosion, from sharp and dissolving humidities, rather than any proper digestion, chylifactive mutation, or alimental conversion, is with good reason doubted.[2]

[1] *And whether, &c.*] This paragraph first added in third edition.

[2] *That therefore, &c.*] This paragraph was first added in second edition.

CHAPTER XXIII.

Of the Unicorn's Horn.

GREAT account and much profit is made of unicorn's horn, at least of that which beareth the name thereof; wherein notwithstanding, many, I perceive, suspect an imposture, and some conceive there is no such animal extant.[3] Herein, therefore, to draw up our determinations: beside the several places of Scripture mentioning this animal (which some may well contend to be only meant of the rhinoceros) we are so far from denying there is any unicorn at all, that we affirm there are many kinds thereof. In the number of quadrupeds, we will concede no less than five; that is, the Indian ox, the Indian ass, the rhinoceros, the oryx, and that which is more eminently termed *monoceros* or *unicornis*. Some in the list of fishes; as that described by Olaus, Albertus, and others; and some unicorns we will allow even among insects, as those four kinds of nasicornous beetles, described by Muffetus.

Secondly, although we concede there be many unicorns, yet are we still to seek; for whereunto to affix this horn in

[3] *Some conceive, &c.*] Some information, on this much debated subject, was obtained by M. Rüppell, in Kordofan, where the unicorn was said to be known, and to bear the name of millekma. Persons of various conditions in life agreed to the statement, that the millekma was of a reddish colour, of the size of a small horse, of the slender make of a gazelle, and furnished with a long, straight, slender horn in the male, which was wanting in the female. Some added that it had divided hoofs, while others declared it to be single-hoofed. According to these statements it inhabits the deserts of the south of Kordofan, is uncommonly fleet, and comes only occasionally to the Koldagi slave mountain on the borders of Kordofan. Three several Arabs asserted to M. Rüppell that they had themselves seen the animal in question; and one of his slaves from Koldagi, on seeing the antelopes brought from the desert of Korti, gave, of his own free motion, a description of the millekma, exactly coincided with the notices afterwards obtained by the traveller.

The unicorn of Scripture, however, which is there spoken of as an animal of great size and strength, is probably one of the species of two-horned rhinoceros. Mr. Burchell has described one in the *Bulletin des Sciences, Juin*, 1817. In the 15th number of the *Missionary Sketches*, published by the London Missionary Society, is a description, accompanied by a wood-cut, of a species shot in South Africa—the head of which is preserved in the museum of the society, Old Jewry, London: which seems, on account of its great size, strength, and ferocity, and of the extraordinary length of its anterior horn, not unlikely to have been the unicorn of Scripture.

question, or to determine from which thereof we receive this magnified medicine, we have no assurance, or any satisfactory decision. For although we single out one, and eminently thereto assign the name of the unicorn, yet can we not be secure what creature is meant thereby, what constant shape it holdeth, or in what number to be received. For as far as our endeavours discover, this animal is not uniformly described, but differently set forth by those that undertake it. Pliny affirmeth it is a fierce and terrible creature; Vartomannus, a tame and mansuete animal; those which Garcias ab Horto described about the Cape of Good Hope, were beheld with heads like horses; those which Vartomannus beheld, he described with the head of a deer; Pliny, Ælian, Solinus, and after these, from ocular assurance, Paulus Venetus affirmeth the feet of the unicorn are undivided, and like the elephants; but those two which Vartomannus beheld at Mecca, were, as he describeth, footed like a goat. As Ælian describeth, it is in the bigness of an horse; as Vartomannus, of a colt; that which Thevet speaketh of was not so big as an heifer; but Paulus Venetus affirmeth they are but little less than elephants. Which are discriminations very material, and plainly declare, that under the same name authors describe not the same animal: so that the unicorn's horn of one, is not that of another, although we proclaim an equal virtue in all.

Thirdly, although we were agreed what animal this was, or differed not in its description, yet would this also afford but little satisfaction; for the horn we commonly extol is not the same with that of the ancients. For that, in the description of Ælian and Pliny, was black; this which is shewed amongst us is commonly white, none black; and of those five which Scaliger beheld, though one spadiceous, or of a light red, and two inclining to red, yet was there not any of this complexion among them.

Fourthly, what horns soever they be which pass amongst us, they are not surely the horns of any one kind of animal, but must proceed from several sorts of unicorns. For some are wreathed, some not: that famous one which is preserved at St. Denis, near Paris, hath wreathy spires, and cochleary

turnings about it, which agreeth with the description of the unicorn's horn in Ælian. Those two in the treasure of St. Mark are plain and best accord with those of the Indian ass, or the descriptions of other unicorns: that in the repository of the Elector of Saxony is plain and not hollow, and is believed to be a true land unicorn's horn. Albertus Magnus describeth one ten feet long, and at the base about thirteen inches compass; and that of Antwerp, which Goropius Becanus describeth, is not much inferior unto it; which best agree unto the descriptions of the sea-unicorns; for these, as Olaus affirmeth, are of that strength and bigness, as to be able to penetrate the ribs of ships. The same is more probable, because it was brought from Iceland, from whence, as Becanus affirmeth, three other were brought in his days: and we have heard of some which have been found by the sea-side, and brought unto us from America. So that, while we commend the unicorn's horn, and conceive it peculiar but unto one animal, under apprehension of the same virtue we use very many, and commend that effect from all, which every one confineth unto some one he hath either seen or described.

Fifthly, although there be many unicorns, and consequently many horns, yet many there are which bear that name, and currently pass among us, which are no horns at all. Such are those fragments and pieces of *lapis ceratites*, commonly termed *cornu fossile*, whereof Boëtius had no less than twenty several sorts presented him for unicorn's horns. Hereof, in subterraneous cavities, and under the earth, there are many to be found in several parts of Germany, which are but the lapidescencies and petrifactive mutations of hard bodies; sometimes of horn, of teeth, of bones, and branches of trees, whereof there are some so imperfectly converted, as to retain the odour and qualities of their originals, as he relateth of pieces of ash and walnut. Again, in most, if not all, which pass amongst us, and are extolled for precious horns, we discover not an affection common unto other horns; that is, they mollify not with fire, they soften not upon decoction or infusion, nor will they afford a jelly or mucilaginous concretion in either; which notwithstanding we may effect in goat's horns, sheep's, cow's, and hart's horn; in the horn of the

rhinoceros, the horn of the *pristis*, or sword-fish.[4] Nor do they become friable or easily powderable by philosophical calcination, that is, from the vapour or steam of water, but split and rift contrary to other horns. Briefly, many of those commonly received, and whereof there be so many fragments preserved in England, are not only no horn, but a substance harder than a bone, that is, parts of the tooth of a morse or sea-horse; in the midst of the solider part containing a curdled grain, which is not to be found in ivory. This, in northern regions, is of frequent use for hafts of knives or hilts of swords, and being burnt, becomes a good remedy for fluxes; but antidotally used, and exposed for unicorn's horn, it is an insufferable delusion, and with more veniable deceit it might have been practised in hart's horn.

The like deceit may be practised in the teeth of other sea animals; in the teeth also of the hippopotamus, or great animal which frequenteth the river Nilus: for we read that the same was anciently used instead of ivory, or elephant's tooth. Nor is it to be omitted, what hath been formerly suspected, but now confirmed by Olaus Wormius, and Thomas Bartholinus, and others, that those long horns, preserved as precious rarities in many places, are but the teeth of narwhals, to be found about Iceland, Greenland, and other northern regions, of many feet long, commonly wreathed, very deeply fastened in the upper jaw, and standing directly forward, graphically described in Bartholinus,* according unto one sent from a bishop of Iceland, not separated from the crany. Hereof Mercator hath taken notice in his description of Iceland: some relations hereof there seem to be in Purchas, who also delivereth, that the horn at Windsor was in his second voyage brought hither by Forbisher. These, before the northern discoveries, as unknown rarities, were carried by merchants into all parts of Europe; and though found on the sea-shore, were sold at very high rates; but are now become

* *De Unicornu.*

[4] *an affection common unto other horns, &c.*] It would appear that Browne had confounded true horn (which is composed of coagulated albumen, with a little gelatin, and about a half per cent. of phosphate of lime,) with hart's horn, and others of a similar nature, intermediate between bone and horn.

more common, and probably in time will prove of little esteem; and the bargain of Julius the Third be accounted a very hard one, who stuck not to give many thousand crowns for one.

Nor is it great wonder we may be so deceived in this, being daily gulled in the brother antidote, bezoar; whereof though many be false, yet one there passeth amongst us of more intolerable delusion, somewhat paler than the true stone, and given by women in the extremity of great diseases, which, notwithstanding is no stone, but seems to be the stony seed of some *lithospermum* or greater grumwell; or the *lobus echinatus* of Clusius, called also the bezoar nut; for being broken, it discovereth a kernel of a leguminous smell and taste, bitter like a lupine, and will swell and sprout if set in the ground, and therefore more serviceable for issues, than dangerous and virulent diseases.[5]

Sixthly, although we were satisfied we had the unicorn's horn, yet were it no injury unto reason to question the efficacy thereof, or whether those virtues pretended do properly belong unto it. For what we observed, (and it escaped not the observation of Paulus Jovius many years past) none of the ancients ascribed any medicinal or antidotal virtue unto the unicorn's horn; and that which Ælian extolleth, who was the first and only man of the ancients who spake of the medical virtue of any unicorn, was the horn of the Indian ass; whereof, saith he, the princes of those parts make bowls and drink therein, as preservatives against poison, convulsions, and the falling sickness. Now the description of that horn is not agreeable unto that we commend; for that (saith he) is red above, white below, and black in the middle; which is very different from ours, or any to be seen amongst us. And thus, though the description of the unicorn be very ancient, yet was there of old no virtue ascribed unto it; and although this amongst us receive the opinion of the same virtue, yet is it not the same horn whereunto the ancients ascribed it.

Lastly, although we allow it an antidotal efficacy, and such as the ancients commended, yet are there some virtues as-

[5] *The like deceit, &c.*] These two paragraphs were first added in the 2nd edit.

cribed thereto by moderns not easily to be received; and it hath surely fallen out in this, as other magnified medicines, whose operations, effectual in some diseases, are presently extended unto all. That some antidotal quality it may have, we have no reason to deny; for since elk's hoofs and horns are magnified for epilepsies, since not only the bone in the hart, but the horn of the deer is alexipharmical,* and ingredient into the confection of hyacinth, and the electuary of Maximilian, we cannot without prejudice except against the efficacy of this. But when we affirm it is not only antidotal to proper venoms, and substances destructive by qualities we cannot express; but that it resisteth also sublimate, arsenick, and poisons which kill by second qualities, that is, by corrosion of parts; I doubt we exceed the properties of its nature, and the promises of experiment will not secure the adventure. And therefore in such extremities, whether there be not more probable relief from fat and oily substances, which are the open tyrants over salt and corrosive bodies, than precious and cordial medicines which operate by secret and disputable proprieties; or whether he that swallowed lime, and drank down mercury water, did not more reasonably place his cure in milk, butter, or oil, than if he had recurred unto pearl and bezoar, common reason at all times, and necessity in the like case, would easily determine.

Since therefore, there be many unicorns; since that whereto we appropriate a horn is so variously described, that it seemeth either never to have been seen by two persons, or not to have been one animal; since though they agreed in the description of the animal, yet is not the horn we extol the same with that of the ancients; since what horns soever they be that pass among us, they are not the horns of one, but several animals: since many in common use and high esteem are no horns at all; since if they were true horns, yet might their virtues be questioned; since though we allowed some virtues, yet were not others to be received; with what security a man may rely on this remedy, the mistress of fools hath already instructed some, and to wisdom (which is never too wise to learn) it is not too late to consider.

* Expulsive of poisons.

CHAPTER XXIV.

That all Animals of the Land are in their kind in the Sea.

THAT all animals of the land are, in their kind, in the sea, although received as a principle, is a tenet very questionable, and will admit of restraint. For some in the sea are not to be matched by any inquiry at land, and hold those shapes which terrestrious forms approach not; as may be observed in the moon-fish, or *orthragoriscus*, the several sorts of rays, torpedos, oysters, and many more; and some there are in the land which were never maintained to be in the sea, as panthers, hyænas, camels, sheep, moles, and others, which carry no name in icthyology, nor are to be found in the exact descriptions of Rondeletius, Gesner, or Aldrovandus.

Again, though many there be which make out their nominations, as the hedgehog, sea serpents, and others; yet are there also very many that bear the name of animals at land, which hold no resemblance in corporal configuration; in which account, we compute *vulpecula, canis, rana, passer, cuculus, asellus, turdus, lepus, &c.* Wherein while some are called the fox, the dog, the sparrow or frog fish, and are known by common names with those at land; yet as their describers attest, they receive not these appellations from a total similitude in figure, but any concurrence in common accidents, in colour, condition or single conformation. As for sea horses, which much confirm this assertion, in their common descriptions[6] they are but *grotesco* delineations, which fill up empty spaces in maps, and mere pictorial inventions,

[6] *descriptions.*] But Scaliger, in his 187th exercitation, relates a particular description of them, and that 2 of them having got from the Portugals (watching at Capo Viride in the mouth of Gambra) as soone as they sawe the men returne to the long boote, set upon them most fiercely, and were not driven away with blowes; but as despairinge of doing any hurt to the men.—*Wr.*

not any physical shapes: suitable unto those which (as Pliny delivereth) Praxiteles long ago set out in the temple of Domitius. For that which is commonly called a sea-horse, is properly called a *morse*, and makes not out that shape. That which the ancients named *hippocampus*, is a little animal about six inches long, and not preferred beyond the class of insects.[7] That which they termed *hippopotamus*, an amphibious animal, about the river Nile, so little resembleth an horse, that, as Matthiolus observeth, in all except the feet it better makes out a swine. That which they termed a lion, was but a kind of lobster; that which they called the bear, was but one kind of crab; and that which they named *bos marinus*, was not as we conceive a fish resembling an ox, but a skait or thornback, so named from its bigness, expressed by the Greek word *bous*, which is a prefix of augmentation to many words in that language.

And therefore, although it be not denied that some in the water do carry a justifiable resemblance to some at land, yet are the major part which bear their names, unlike; nor do they otherwise resemble the creatures on earth, than they on earth the constellations which pass under animal names in heaven; nor the dog-fish at sea much more make out the dog of the land, than that his cognominal or namesake in the heavens. Now if from a similitude in some, it be reasonable to infer a correspondence in all, we may draw this analogy of animals upon plants; for vegetables there are which carry a near and allowable similitude unto animals.* We might also conclude that animal shapes were generally made out in minerals: for several stones there are that bear their names in relation to animals or their parts, as *lapis anguinus, conchites, echinites, enccphalites, ægophthalmus,* and many more; as will appear in the writers of minerals, and especially in Boëtius and Aldrovandus.

Moreover, if we concede that the animals of one element might bear the names of those in the other, yet in strict rea-

* *Fab. Column. de stirp. rarioribus, Orchis, Cercopithecophora, Anthropophora.*

[7] *not preferred, &c.*] A mistake. The hippocampus is one of the osseous fishes, belonging to the tribe called, by Cuvier, *lophobranches:—syngnathus hippocampus*, Lin.; but now constituted a distinct genus, *hippocampus vulgaris.*

son the watery productions should have the prenomination, and they of the land rather derive their names than nominate those of the sea; for the watery plantations were first existent, and as they enjoyed a priority in form, had also in nature precedent denominations; but falling not under that nomenclature of Adam, which unto terrestrious animals assigned a name appropriate unto their natures, from succeeding spectators they received arbitrary appellations, and were respectively denominated unto creatures known at land, who in themselves had independent names, and not to be called after them which were created before them.

Lastly, by this assertion we restrain the hand of God,[8] and abridge the variety of the creation, making the creatures of one element, but an acting over those of another, and conjoining as it were the species of things which stood at distance in the intellect of God, and though united in the chaos, had several seeds of their creation. For although in that indistinguished mass all things seemed one, yet separated by the voice of God, according to their species, they came out in incommunicated varieties, and irrelative seminalities, as well as divided places, and so although we say the world was made in six days, yet was there as it were a world in every one, that is, a distinct creation of distinguished creatures; a distinction in time of creatures divided in nature, and a several approbation and survey in every one.

[8] *We restrain the hand of God.*] This is a greate inconsequent, for both baboons and tritons imitate the shape of man, without disparagement to him, or (the Creator) Him that made man.—*Wr.*

CHAPTER XXV.[9]

Concerning the common course of our Diet, in making choice of some animals, and abstaining from eating others.

WHY we confine our food unto certain animals, and totally reject some others, how these distinctions crept into several nations, and whether this practice be built upon solid reason, or chiefly supported by custom or opinion, may admit consideration.

For first, there is no absolute necessity to feed on any, and if we resist not the stream of authority, and several deductions from Holy Scripture, there was no sarcophagy* before the flood, and without the eating of flesh, our fathers, from vegetable aliments, preserved themselves unto longer lives than their posterity by any other. For whereas it is plainly said, "I have given you every herb which is upon the face of all the earth, and every tree; to you it shall be for meat:"—presently after the deluge, when the same had destroyed or infirmed[1] the nature of vegetables, by an expression of enlargement it is again delivered, "Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things."

And therefore, although it be said that Abel was a shepherd, and it be not readily conceived the first man would keep sheep, except they made food thereof; great expositors will tell us, that it was partly for their skins wherewith they were clothed, partly for their milk whereby they were sustained, and partly for sacrifices, which they also offered.

And though it may seem improbable that they offered flesh yet ate not thereof, and Abel can hardly be said to

* Eating of Flesh.

9 This chapter was new in 2nd edition.

1 *infirmed.*] What scriptural evidence have we that the flood had "impaired the properties" of the vegetables which had been and still remained as food for man?

offer the firstlings of his stock, and the fat or acceptable part, if men used not to taste the same, whereby to raise such distinctions; some will confine the eating of flesh unto the line of Cain, who extended their luxury, and confined not unto the rule of God. That if at any time the line of Seth ate flesh, it was extraordinary, and not only at their sacrifices; or else, as Grotius hinteth, if any such practice there were, it was not from the beginning, but from that time when the ways of men were corrupted, and whereof it is said, that the wickedness of man's heart was great; the more righteous part of mankind probably conforming unto the diet prescribed in paradise, and the state of innocency; and yet however the practice of man conformed, this was the injunction of God, and might be therefore sufficient, without the food of flesh.

That they fed not on flesh, at least the faithful party, before the flood, may become more probable, because they refrained the same for some time after. For so it was generally delivered of the golden age and reign of Saturn, which is conceived the time of Noah, before the building of Babel. And he that considereth how agreeable this is unto the traditions of the Gentiles; that that age was of one tongue; that Saturn devoured all his sons but three; that he was the son of Oceanus and Thetis; that a ship was his symbol; that he taught the culture of vineyards, and the art of husbandry, and was therefore described with a sickle, may well conceive these traditions had their original in Noah. Nor did this practice terminate in him, but was continued at least in many after; as (beside the Pythagoreans of old, and Banyans now in India, who upon single opinions refrain the food of flesh) ancient records do hint or plainly deliver; although we descend not so low as that of Asclepiades delivered by Porphyrius,* that men began to feed on flesh in the reign of Pygmaleon, brother of Dido, who invented several torments to punish the eaters of flesh.

Nor did men only refrain from the flesh of beasts at first, but, as some will have it, beasts from one another. And if we

* περὶ ἀποχῆς.

should believe very grave conjectures, carnivorous animals now were not flesh devourers then, according to the expression of the divine provision for them; "To every beast of the earth, and to every fowl of the air, I have given every green herb for meat, and it was so." And is also collected from the store laid up in the ark, wherein there seems to have been no fleshy provision for carnivorous animals. For of every kind of unclean beast there went but two into the ark, and therefore no stock of flesh to sustain them many days, much less almost a year.

But whenever it be acknowledged that men began to feed on flesh, yet how they betook themselves after to particular kinds thereof, with rejection of many others, is a point not clearly determined. As for the distinction of clean and unclean beasts, the original is obscure, and salveth not our practice. For no animal is naturally unclean, or hath this character in nature, and therefore whether in this distinction there were not some mystical intention; whether Moses, after the distinction made of unclean beasts, did not name these so before the flood by anticipation; whether this distinction before the flood were not only in regard of sacrifices, as that delivered after was in regard of food (for many were clean for food, which were unclean for sacrifice,) or whether the denomination were but comparative, and of beasts less commodious for food, although not simply bad, is not yet resolved.

And as for the same distinction in the time of Moses, long after the flood, from thence we hold no restriction, as being no rule unto nations beside the Jews, in dietetical consideration or natural choice of diet, they being enjoined or prohibited certain foods upon remote and secret intentions. Especially thereby to avoid community with the Gentiles upon promiscuous commensality, or to divert them from the idolatry of Egypt, whence they came, they were enjoined to eat the gods of Egypt in the food of sheep and oxen. Withal in this distinction of animals the consideration was hieroglyphical, in the bosom and inward sense implying an abstinence from certain vices symbolically intimated from the nature of those animals, as may be well made out in the prohibited meat of swine, cony, owl, and many more.

At least the intention was not medical, or such as might oblige unto conformity or imitation: for some we refrain which that law alloweth, as locusts and many others; and some it prohibiteth, which are accounted good meat in strict and medical censure, as (beside many fishes which have not fins and scales) the swine, cony, and hare, a dainty dish with the ancients; as is delivered by Galen, testified by Martial, as the popular opinion implied that men grew fair by the flesh thereof, by the diet of Cato, that is, hare and cabbage, and the *jus nigrum*,* or black broth of the Spartans, which was made with the blood and bowels of an hare.

And if we take a view of other nations we shall discover that they refrained many meats upon like considerations. For in some the abstinence was symbolical: so Pythagoras enjoined abstinence from fish, that is, luxurious and dainty dishes; so, according to Herodotus, some Egyptians refrained swine's flesh, as an impure and sordid animal, which whoever but touched was fain to wash himself.

Some abstained superstitiously or upon religious considerations: so the Syrians refrained fish and pigeons; the Egyptians of old, dogs, eels, and crocodiles, though Leo Africanus delivers that many of late do eat them with good gust; and Herodotus also affirmeth that the Egyptians of Elephantina (unto whom they were not sacred) did eat thereof in elder times; and writers testify that they are eaten at this day in India and America. And so, as Cæsar reports,† unto the ancient Britains it was piaculous[2] to taste a goose, which dish at present no table is without.

Unto some nations the abstinence was political, and for some civil advantage: so the Thessalians refrained storks, because they destroyed their serpents; and the like in sundry animals is observable in other nations.

And under all these considerations were some animals refrained: so the Jews abstained from swine at first symbolically, as an emblem of impurity, and not fear of the leprosy, as Tacitus would put upon them. The Cretians superstiti-

* *Inter quadrupedes mattya prima lepus.* † Lib. v, *De Bello Gall.*

[2] *piaculous.*] Requiring expiation.

ously, upon tradition that Jupiter was suckled into that country by a sow. Some Egyptians politically, because they supplied the labour of plowing by rooting up the ground. And upon like considerations, perhaps, the Phœnicians and Syrians fed not on this animal; and, as Solinus reports, the Arabians also and Indians. A great part of mankind refraining one of the best foods, and such as Pythagoras himself would eat; who, as Aristoxenus records,* refused not to feed on pigs.

Moreover, while we single out several dishes and reject others, the selection seems but arbitrary, or upon opinion; for many are commended and cried up in one age, which are decried and nauseated in another. Thus, in the days of Mæcenas, no flesh was preferred before young asses; which notwithstanding became abominable unto succeeding appetites. At the table of Heliogabalus the combs of cocks were an esteemed service; which country stomachs will not admit at ours. The *sumen*, or belly and dugs of swine with pig, and sometimes beaten and bruised unto death; the womb of the same animal, especially that was barren, or else had cast her young ones, though a tough and membranous part, was magnified by Roman palates; whereunto nevertheless, we cannot persuade our stomachs. How *alec*, *muria*, and *garum*, would humour our gust I know not; but surely few there are that could delight in their *cyceon*, that is, the common draught of honey, cheese, parched barley-flower, oil, and wine; which notwithstanding was a commended mixture, and in high esteem among them. We mortify ourselves with the diet of fish, and think we fare coarsely if we refrain from the flesh of other animals. But antiquity held another opinion hereof; when Pythagoras, in prevention of luxury, advised not so much as to taste of fish. Since the Rhodians were wont to call them clowns that eat flesh; and since Plato, to evidence the temperance of the noble Greeks before Troy, observed, that it was not found they fed on fish, though they lay so long near the Hellespont, and it was only observed in the companions of Menelaus,† that, being almost starved, they betook themselves to fishing about Pharos.

* *Aul. Gell.* lib. iv. † *Odyss.* iv.

Nor will (I fear) the attest or prescript of philosophers and physicians be a sufficient ground to confirm or warrant common practice, as is deducible from ancient writers, from Hippocrates, Galen, Simeon, Sethi, and the latter tracts of Nonnus* and Castellanus.† So Aristotle and Albertus commend the flesh of young hawks; Galen‡ the flesh of foxes about autumn, when they feed on grapes; but condemneth quails; and ranketh geese but with ostriches: which, notwithstanding, present practice and every table extolleth. Men think they have fared hardly, if in times of extremity they have descended so low as dogs: but Galen delivereth,§ that young, fat, and gelded, they were the food of many nations: and Hippocrates|| ranketh the flesh of whelps with that of birds, who also commends them against the spleen, and to promote conception. The opinion in Galen's time, which Pliny also followeth, deeply condemneth horse-flesh, and conceived the very blood thereof destructive; but no diet is more common among the Tartars, who also drink their blood. And though this may only seem an adventure of northern stomachs, yet as Herodotus tells us, in the hotter clime of Persia the same was a convivial dish, and solemnly eaten at the feasts of their nativities; whereat they dressed whole horses, camels, and asses, contemning the poverty of Grecian feasts, as unfurnished of dishes sufficient to fill the bellies of their guests.

Again, while we confine our diet in several places, all things almost are eaten, if we take in the whole earth;[3] for

* Non. *De Re Cibaria.* † Cast. *De Esu Carnium.* ‡ Gal. *Alim. sac.* lib. iii.
§ Gal. *Simpl. fac.* lib. iii. || Hip. *De Morbis de supersit.*

[3] *all things almost are eaten, &c.*] This chapter, which exhibits all the characteristic acuteness of our author, and has afforded opportunity for the display of his extensive and very curious reading, reminds me of a passage in *Burchell's Southern Africa*, vol. ii, p. 33, to which I refer the reader.

I remember an amusing illustration of the adage, that one man's food is another's poison, in an incident of which I was a witness. Some years ago, visiting France in company with a Scotch gentleman, we sat down to dinner, just after our landing, at a *table d'hôte*, at Dieppe. Among the dishes which had been provided to suit the nationality of British visitors, was some "*ros bif;*" a lean square lump of beef roasted to the consistence of mahogany, served up with thin sour gravy. My Scotch friend, after vainly endeavouring to feed on the French dishes, was introduced to the beef. Its toughness he might have endured; but the thin sour gravy was too much! He turned to me with a face of absolute despair, exclaiming, "*I'll cartainly be starved in this country.*" Milk and eggs were the only food I could prevail on him to taste.

that which is refused in one country is accepted in another, and in the collective judgment of the world, particular distinctions are overthrown. Thus were it not hard to shew, that tigers, elephants, camels, mice, bats, and others, are the food of several countries; and Lerius, with others, delivers, that some Americans eat of all kinds, not refraining toads and serpents; and some have run so high, as not to spare the flesh of man; a practice inexcusable, nor to be drawn into example, a diet beyond the rule and largest indulgence of God.

As for the objection against beasts and birds of prey it acquitteth not our practice, who observe not this distinction in fishes, nor regard the same in our diet of pikes, perches, and eels; nor are we excused herein, if we examine the stomachs of mackerels, cods, and whitings. Nor is the foulness of food sufficient to justify our choice; for (beside that their natural heat is able to convert the same into laudable aliment) we refuse not many whose diet is more impure than some which we reject; as may be considered in hogs, ducks, puets, and many more.

Thus we perceive the practice of diet doth hold no certain course nor solid rule of selection or confinement; some in an indistinct voracity eating almost any; others out of a timorous pre-opinion refraining very many. Wherein indeed, necessity, reason, and physic, are the best determinators. Surely many animals may be fed on, like many plants; though not in alimental, yet medical considerations: whereas, having raised antipathies by pre-judgment or education, we often nauseate proper meats, and abhor that diet which disease or temper requireth.

Now, whether it were not best to conform unto the simple diet of our forefathers; whether pure and simple waters were not more healthful than fermented liquors; whether there be not an ample sufficiency without all flesh, in the food of honey, oil, and the several parts of milk; in the variety of grains, pulses, and all sorts of fruits, since either bread or beverage may be made almost of all; whether nations have rightly confined unto several meats; or whether the common food of one country be not more agreeable unto another; how indis-

tinctly all tempers apply unto the same, and how the diet of youth and old age is confounded; were considerations much concerning health, and might prolong our days, but not this discourse.

CHAPTER XXVI.[4]

Of the Spermaceti Whale.

WHAT *spermaceti* is, men might justly doubt, since the learned Hofmannus, in his work of thirty years,* saith plainly, *Nescio quid sit.* And therefore need not wonder at the variety of opinions; while some conceived it to be *flos maris;* and many, a bituminous substance floating upon the sea.

That it was not the spawn of the whale, according to vulgar conceit or nominal appellation, philosophers have always doubted, not easily conceiving the seminal humour of animals should be inflammable or of a floating nature.

That it proceedeth from the whale, beside the relation of Clusius and other learned observers, was indubitably determined, not many years since, by a *spermaceti* whale, cast on our coast of Norfolk;† which, to lead on further enquiry, we cannot omit to inform. It contained no less than sixty feet in length, the head somewhat peculiar, with a large prominency over the mouth; teeth only in the lower jaw, received into fleshy sockets in the upper. The weight of the largest about two pounds; no gristly substances in the mouth, commonly called whale-bones; only two short fins seated forwardly on the back; the eyes but small; the pizzle large and prominent. A lesser whale of this kind, above twenty years ago, was cast upon the same shore.‡

The description of this whale seems omitted by Gesner, Rondeletius, and the first editions of Aldrovandus; but described in the Latin impression of Pareus, in the *Exoticks* of

* *De Medicamentis Officin.* † Near Wells. ‡ Near Hunstanton.

[4] *Chap.* xxvi.] This chapter was first added in 3rd edition.

Clusius, and the *Natural History* of Nirembergius; but more amply in the icons and figures of Johnstonus.

Mariners (who are not the best nomenclators) called it a *jubartas*, or rather *gibbartas*. Of the same appellation we meet with one in Rondeletius, called by the French, *gibbar*, from its round and gibbous back. The name, *gibbarta*, we find also given unto one kind of Greenland whales; but this of ours seemed not to answer the whale of that denomination, but was more agreeable unto the *trumpo* or *spermaceti* whale,[5] according to the account of our Greenland describers in Purchas; and maketh the third among the eight remarkable whales of that coast.

Out of the head of this whale, having been dead divers days and under putrefaction, flowed streams of oil and *spermaceti*, which was carefully taken up and preserved by the coasters. But upon breaking up, the magazine of *spermaceti* was found in the head, lying in folds and courses, in the bigness of goose-eggs, encompassed with large flaky substances, as large as a man's head, in form of honeycombs, very white and full of oil.

Some resemblance or trace hereof there seems to be in the *physiter* or *capidolio* of Rondeletius; while he delivers, that a fatness, more liquid than oil, runs from the brain of that animal; which being out, the relicks are like the scales of *Sardinos* pressed into a mass; which melting with heat, are again concreted by cold. And this many conceive to have been the fish which swallowed Jonas; although, for the largeness of the mouth, and frequency in those seas, it may possibly be the *lamia*.

Some part of the *spermaceti* found on the shore was pure, and needed little depuration; a great part mixed with fœtid oil, needing good preparation, and frequent expression, to bring it to a flaky consistency. And not only the head, but other parts contained it. For the carnous parts being roasted the oil dropped out, an axungious[6] and thicker part sub-

[5] trumpo *or* spermaceti *whale.*] The *cachalot macrocephalus*. The upper part of its enormous head, as here described, is filled with an oil, called (very absurdly) *spermaceti*, which fixes when it cools, assuming a consistence like that of the pulp of a water-melon, and when completely concrete, it is crystallized and brilliant.

[6] *axungious.*] Fatty. From *axungia*.

siding; the oil itself contained also much in it, and still after many years some is obtained from it.

Greenland enquirers seldom meet with a whale of this kind; and therefore it is but a contingent commodity, not reparable from any other. It flameth white and candent like camphor, but dissolveth not in *aqua fortis* like it. Some lumps containing about two ounces, kept ever since in water, afford a fresh and flosculous smell. Well prepared and separated from the oil, it is of a substance unlikely to decay, and may outlast the oil required in the composition of Mattbiolus.

Of the large quantity of oil, what first came forth by expression from the *spermaceti* grew very white and clear, like that of almonds or *ben*. What came by decoction was red. It was found to spend much in the vessels which contained it; it freezeth or coagulateth quickly with cold, and the newer soonest. It seems different from the oil of any other animal, and very much frustrated the expectation of our soap boilers, as not incorporating or mingling with their lyes. But it mixeth well with painting colours, though hardly drieth at all. Combers of wool made use hereof, and country people for cuts, aches, and hard tumours. It may prove of good medical use, and serve for a ground in compounded oils and balsams. Distilled, it affords a strong oil, with a quick and piercing water. Upon evaporation it gives a balsam, which is better performed with turpentine distilled with *spermaceti*.

Had the abominable scent permitted, enquiry had been made into that strange composure of the head, and hillock of flesh about it. Since the workmen affirmed they met with *spermaceti* before they came to the bone, and the head yet preserved seems to confirm the same. The sphincters inserving unto the *fistula* or spout, might have been examined, since they are so notably contrived in other cetaceous animals; as also the *larynx* or throttle, whether answerable unto that of dolphins and porpoises in the strange composure and figure which it maketh. What figure the stomach maintained in this animal of one jaw of teeth, since in porpoises, which abound in both, the ventricle is trebly divided, and since in that formerly taken nothing was found but weeds and a *loligo*. The heart, lungs, and kidneys, had not escaped; wherein are

remarkable differences from animals of the land: likewise what humour the bladder contained, but especially the seminal parts, which might have determined the difference of that humour from this which beareth its name.

In vain it was to rake for ambergriese[7] in the paunch of this leviathan, as Greenland discoverers, and attests of experience dictate that they sometimes swallow great lumps thereof in the sea; insufferable fœtor denying that enquiry: and yet if, as Paracelsus encourageth, ordure makes the best musk, and from the most fœtid substances may be drawn the most odoriferous essences; all that had not Vespasian's nose* might boldly swear here was a subject fit for such extractions.

CHAPTER XXVII.

Compendiously of the musical note of Swans before their death; that the flesh of Peacocks corrupteth not; that they are ashamed of their legs; that Storks will only live in republicks and free states; of the noise of a Bittern by putting the bill in a reed; that Whelps are blind nine days; of the antipathy between a Toad and a Spider, a Lion and a Cock; that an Earwig hath no wings; of Worms: that Flies make that humming noise by their mouths or wings; of the Tainct or small Red Spider; of the Glow-worm; of the providence of Pismires in biting off the ends of corn.

1. And first, from great antiquity, and before the melody of Syrens, the musical note of swans hath been commended, and that they sing most sweetly before their death: for thus we read in Plato, that from the opinion of *Metempsychosis*, or transmigration of the souls of men into the bodies of beasts most suitable unto their human condition, after his death

* *Cui odor lucri ex re qualibet.*

7 *ambergriese.*] This substance is excrement hardened by disease, and mixed with undigested aliment: found in lumps in the intestines.

Orpheus the musician became a swan; thus was it the bird of Apollo, the god of music, by the Greeks; and an hieroglyphick of music among the Egyptians,[8] from whom the Greeks derived the conception;—hath been the affirmation of many Latins, and hath not wanted assertors almost from every nation.

All which notwithstanding, we find this relation doubtfully received by Ælian, as an hear-say account by Bellonius, as a false one by Pliny, expressly refuted by Myndius in *Athenæus*, and severely rejected by Scaliger; whose words unto Cardan are these: *De cygno verò cantu suavissimo quem cum parente mendaciorum Græcia jactare ausus es, ad Luciani tribunal apud quem novi aliquid dicas, statuo.* Authors also that countenance it, speak not satisfactorily of it: some affirming they sing not till they die; some that they sing, yet die not. Some speak generally, as though this note were in all; some but particularly, as though it were only in some; some in places remote, and where we can have no trial of it; others in places where every experience can refute it; as Aldrovandus upon relation delivered concerning the music of the swans on the river of Thames, near London.

Now that which countenanceth and probably confirmeth this opinion, is the strange and unusual conformation of the windpipe, or vocal organ[9] in this animal; observed first by

[8] *an hieroglyphick, &c.*] In Horapollo. Neither Dr. Young nor Champollion speaks of it, though the latter mentions, as represented in hieroglyphicks, "many web-footed birds."—*Br.*

[9] *conformation of the wind-pipe, &c.*] The vast variety which exists, in quality and extent of tone, as well as in diversity of modulation in the cry and song of birds, arises from a corresponding variety in the structure of their organs of voice. This curious subject has been investigated with much diligence and ingenuity by various ornithologists; especially by Dr. Latham some years ago, and more recently by Mr. Yarrell. Their papers, in the *Linnæan Transactions*, vols. iv, xv, and xvi, will afford much gratification to those readers who feel an interest in the subject. From the examination of these naturalists, it appears, that much of the strength, as well as perfection, of the song of birds, is attributable to the number and size of the muscles of the larynx. Those of the singing birds are the most numerous of any; and in the *nightingale* are stronger than in any other bird of the same size. The power and depth of tone in some birds will be found to increase with the elongation of the tube. On which principle it is, that the difference of the vocal powers of the mute swan and hooper, or wild swan, must be explained. The more complicated the structure of the tube, the more disagreeable the sound of the voice; the simple forms belonging to the most delightful of our singing birds. Again, shrill notes are produced by short tubes, (as in the case of the *singing birds:*) and deep tones by long tubes (as in the *waders* and *swimmers.*) The substance of the tube itself is also to be considered: birds possessing strong and broad carti-

Aldrovandus, and conceived by some contrived for this intention. For in its length it far exceedeth the gullet, and hath in the chest a sinuous revolution, that is, when it ariseth from the lungs it ascendeth not directly unto the throat, but descending first into a capsulary reception of the breast-bone, by a serpentine and trumpet recurvation it ascendeth again into the neck, and so by the length thereof a great quantity of air is received, and by the figure thereof a musical modulation effected. But to speak indifferently, this formation of the weazand[1] is not peculiar unto the swan, but common also unto the *platea* or shovelard, a bird of no musical throat; and, as Aldrovandus confesseth, may thus be contrived in the swan to contain a larger stock of air, whereby being to feed on weeds at the bottom, they might the longer space detain their heads under water. But were this formation peculiar, or had they unto this effect an advantage from this part, yet have they a known and open disadvantage from another, that is, a flat bill. For no latirostrous[2] animal, (whereof nevertheless there are no slender numbers) were ever commended for their note, or accounted among those animals which have been instructed to speak.

When therefore, we consider the dissention of authors, the falsity of relations, the indisposition of the organs, and the immusical note of all we ever beheld or heard of, if generally taken, and comprehending all swans, or of all places, we cannot assent thereto. Surely he that is bit with a *tarantula*, shall never be cured by this music; and with the same hopes we expect to hear the harmony of the spheres.

lages, or bony rings, have monotonous and loud voices, while the more slender rings allow a corresponding variety in the scale of tone. Mr. Yarrell concludes his second paper with the following observation:—"It will perhaps be objected, that the utmost extent of motion which birds appear to possess the power of exercising, over the various parts of their organ of voice, seems insufficient to account for the effects produced; but it may in answer be urged, that the closest examination or most scientific demonstration of the *chordæ vocales* and muscles in man, with all the auxiliary appendages, afford but an imperfect illustration of the varied and extraordinary powers of the human voice." It need scarcely be observed, that the peculiarity noticed by our author in the tracheæ of the wild swan, has nothing to do with any extraordinary powers of submersion: but is the occasion of the shrill, piercing, and harsh note which has obtained from him the name of the whistler or hooper; an appellation far more applicable than that of the "musical" swan, for which he is indebted to fabulous antiquity.

[1] *weazand*] winde-pipe.—*Wr.*

[2] *latirostrous.*] Broad or shovel-beaked.—*Wr.*

2. That there is a special propriety in the flesh of peacocks roasted or boiled, to preserve a long time incorrupted, hath been the assertion of many; stands yet confirmed by Austin, *De civitate Dei;* by Gygas Sempronius in Aldrovandus; and the same experiment we can confirm ourselves, in the brawn or fleshy parts of peacocks so hanged up with thread, that they touch no place whereby to contract a moisture; and hereof we have made trial both in summer and winter. The reason, some, I perceive, attempt to make out from the siccity and dryness of its flesh, and some are content to rest in a secret propriety hereof. As for the siccity [3] of the flesh, it is more remarkable in other animals; as eagles, hawks, and birds of prey. That it is a propriety or agreeable unto none other, we cannot, with reason, admit: for the same preservation, or rather incorruption, we have observed in the flesh of turkeys, capons, hares, partridges, venison, suspended freely in the air, and after a year and a half, dogs have not refused to eat them.[4]

As for the other conceit, that a peacock is ashamed when he looks on his legs, as is commonly held, and also delivered by Cardan; beside what hath been said against it by Scaliger; let them believe that hold specifical deformities, or that any part can seem unhandsome to their eyes, which hath appeared good and beautiful unto their Maker's. The occasion of this conceit might first arise from a common observation, that when they are in their pride, that is, advance their train, if they decline their neck to the ground, they presently demit, and let fall the same: which indeed they cannot otherwise do; for contracting their body, and being forced to

[3] *siccity.*] There is a siccity which is joynd more with raritye; and another which approaches nearer to solidity; and of this kind are these 5 mentioned, especially 1, 3, 5. But the siccity of the peacock is accompanyed with an unwonted rarity, as appeares by his fethers, the largest and lightest of any other bird under heaven, which argues the drines of his natural temper, *in extremo siccitatis:* to which you may joyne the beauty of his colors, the whitenes, softnes, and tendernes of the pith in his wing and tayle fethers, proceeding (at a yard length) out of a quil, not an inche long, and soe thin and tender, that for want of substance and strength, are not so useful as a crowe's quil.—*Wr.*

[4] *the same preservation, &c.*] "My pendent pantry, made of deal and fine fly wire, and suspended in the great walnut tree, proves an incomparable preservative for meat against flesh-flies. The flesh, by hanging in a brisk current of air, becomes dry on the surface, and keeps till it is tender without tainting." —*Rev. G. White's MSS. Jesse's 2nd Gleanings.* p. 171.

draw in their fore-parts, to establish their hinder in the elevation of their train, if the fore-parts depart and incline to the ground, the hinder grow too weak, and suffer the train to fall. And the same in some degrees is also observable in turkeys.

3. That storks are to be found, and will only live in republicks or free states, is a petty conceit to advance the opinion of popular policies, and from antipathies in nature to disparage monarchical government. But how far agreeable unto truth, let them consider who read in Pliny, that among the Thessalians, who were governed by kings, and much abounded with serpents, it was no less than capital to kill a stork; that the ancient Egyptians honoured them, whose government was from all times monarchical; that Bellonius affirmeth men make them nests in France;[5] that relations make them common in Persia, and the dominions of the great Turk; and lastly, how Jeremy the prophet delivered himself* unto his countrymen, whose government was at that time monarchical; —"the stork in the heaven knoweth her appointed times, the turtle, crane, and swallow, observe the time of their coming, but my people know not the judgments of the Lord;"—wherein, to exprobrate their stupidity, he induceth the providence of storks. Now if the bird had been unknown, the illustration had been obscure, and the exprobration not so proper.

4. That a bittern maketh that mugient[6] noise, or as we term it, bumping, by putting its bill into a reed, as most believe, or as Bellonius and Aldrovandus conceive, by putting the same in mud or water, and after awhile retaining the air by suddenly excluding it again, is not so easily made out. For my own part, though after diligent enquiry, I could never behold them in this motion. Notwithstanding, by others whose observations we have expressly requested, we are in-

* Jer. viii, 7.

[5] *men make them nests, &c.*] "There is a rich hospital at Fez, in Morocco, for the purpose of *assisting and nursing sick cranes and storks, and of burying them when dead.* They hold that storks are human beings in that form, from some distant islands."—*Queen Bee*, iii, 18.—*Jeff.*

[6] *mugient.*] Bellowing, or rather braying, like an asss: for soe his compound name (in the Greeke) signifies ὀνοχρότα-λος, i.e. the harrishe noyse of an asse. —*Wr.*

formed that some have beheld them making this noise on the shore, their bills being far enough removed from reed or water; that is, first strongly attracting the air, and unto a manifest distention of the neck, and presently after with great contention and violence excluding the same again. As for what others affirm, of putting their bill in water or mud, it is also hard to make out. For what may be observed from any that walketh the fens, there is little intermission, nor any observable pause, between the drawing in and sending forth of their breath. And the expiration or breathing forth doth not only produce a noise, but the inspiration or haling in of the air, affordeth a sound that may be heard almost a flight-shot.[7]

Now the reason of this strange and peculiar noise, is deduced from the conformation of the wind-pipe, which in this bird is different from other volatiles.[8] For at the upper extreme it hath no fit *larynx* or throttle to qualify the sound, and at the other end, by two branches deriveth itself into the lungs. Which division consisteth only of semicircular fibres, and such as attain but half way round the part: by which formation they are dilatable into larger capacities, and are able to contain a fuller proportion of air; which being with

[7] *but the inspiration, &c.*] The screaming of parrots is said to be effected by inspiration as well as expiration.

[8] *Now the reason, &c.*] See note on the organs of voice in birds, p. 518. The same contradiction of the common notion is given (from personal experience) by Rev. S. Fovargue, in his *New Catalogue of Vulgar Errors*, pp. 19, 20, 21. He gives, at the same time, a pleasant account of the cunning with which the bittern attempts to deceive his pursuer, when escape is impossible—after relating that he had heard a bittern utter this peculiar cry, and, on repairing to the spot whence the sound proceeded, found that it was covered with coarse grass where there were no reeds—he proceeds thus:—

"When the aforesaid bittern rose up, I shot, and wounded him slightly, and marked him down again in the same kind of grass or short mowed flags. As the grass was not higher than one's shoes, and it was wounded, I was in hopes of having the pleasure of seeing him lie on the ground very plain. However I let my pointer go first, knowing that he would stand at the place. Accordingly he made a dead point at it. I came up as silent as possible, to take a view of it, but to my great surprize, nothing was to be seen.

"There was indeed something which appeared long, like two green weeds lying among the grass, and there was something like a large spot of dried grass or flags a little before them.

"While I was looking at the place, the dog, being out of patience, seized hold of this phœnomenon, which proved to be no other than the bittern itself. Those things which seemed to be green weeds, were its legs extended at the full length, behind the bird, as it lay quite flat upon its belly; and that broad spot of brown or dried grass, was the body, with the wings extended to their full stretch, quite flat upon the ground, which, I believe, formed as complete a *deceptio risus* as any thing in nature."

violence sent up the weazand, and finding no resistance by the *larynx*, it issueth forth in a sound like that from caverns, and such as sometimes subterraneous eruptions from hollow rocks afford.[9] As Aristotle observeth in a problem;* and is observable in pitchers, bottles, and that instrument which Aponensis upon that problem describeth, wherewith in Aristotle's time gardeners affrighted birds.

Whether the large perforations of the extremities of the weazand, in the abdomen, admitting large quantity of air within the cavity of its membranes, as it doth in frogs, may not much assist this mugiency or boation, may also be considered. For such as have beheld them making this noise out of the water, observe a large distention in their bodies; and their ordinary note is but like that of a raven.

5. That whelps are blind nine days, and then begin to see,[1] is the common opinion of all, and some will be apt enough to descend upon oaths upon it. But this I find not answerable unto experience, for upon a strict observation of many, I have scarce found any that see the ninth day, few before the twelfth, and the eyes of some not open before the fourteenth day. And this is agreeable unto the determination of Aristotle, who computeth the time of their *anopsy* or non-vision by that of their gestation. For some, saith he, do go with their young the sixth part of a year, two days over or under, that is, about sixty days or nine weeks; and the whelps of these see not till twelve days. Some go the fifth part of a year, that is, seventy-one days; and these, saith he, see not before the fourteenth day. Others do go the fourth part of the year, that is, three whole months;[2] and these, saith he, are without sight no less than seventeen days.[3] Wherein

* Sect. xv.

[9] *being with violence, &c.*] Yf you observe the geese in their lowd call (which is heardc very far) you shall observe a stronge commotion of their lungs, rising to the bottom of the neck.—*Wr.*

[1] *begin to see*] Itt is probable, in hot, they saw after 9 dayes; in our clymate perhaps not till 12.—*Wr.*

[2] *three whole months.*] i.e. 91 dayes. *Wr.*

[3] *seventeen days.*] 'T is observable that the soonest bred see soonest: and the reason is naturall. The acceleration of the birthe and sighte from one and the same cause: viz. the activity of the spirits in the braine, which in some kinde of dogs is seen much more than in others: and in all the lesser kinds more then the greater: in these, the spirits (of the whelps) being drowned in a loade of fat and fleshe, which afterwards growing dryer, gives them leave to put forthe the

although the accounts be different, yet doth the least thereof exceed the term of nine days, which is so generally received. And this compute of Aristotle doth generally overthrow the common cause alleged for this effect, that is, a precipitation or over-hasty exclusion before the birth be perfect, according unto the vulgar adage, *Festinans canis cæcos parit catulos:* for herein the whelps of longest gestation are also the latest in vision. The manner hereof is this: at the first littering their eyes are fastly closed, that is, by coalition or joining together of the eyelids, and so continue until about the twelfth day; at which time they begin to separate, and may be easily divelled[4] or parted asunder; they open at the inward *canthus* or greater angle of the eye, and so by degrees dilate themselves quite open: an effect very strange, and the cause of much obscurity, wherein as yet men's enquiries are blind, and satisfaction not easily acquirable. Whatever it be, thus much we may observe, those animals are only excluded without sight which are multiparous and multifidous, that is, which have many at a litter, and have also their feet divided into many portions. For the swine, although multiparous, yet being bisulcous, and only cloven hoofed, is not excluded in this manner, but farrowed with open eyes as other bisulcous animals.

6. The antipathy between a toad and a spider, and that they poisonously destroy each other, is very famous, and solemn stories have been written of their combats, wherein most commonly the victory is given unto the spider. Of what toads and spiders it is to be understood would be considered. For the *phalangium* and deadly spiders are different from those we generally behold in England. However, the verity hereof, as also of many others, we cannot but desire; for hereby we might be surely provided of proper antidotes in cases which require them. But what we have observed herein, we cannot in reason conceal; who having in a glass included a toad with several spiders, we beheld the spiders, without resistance to sit upon his head and pass over all his body; which at last upon advantage he swallowed

spirits to an highth of strength, though not of such nimbleness as in the lesser kindes.—*Wr.*

[4] *divelled.*] pulled asunder.

down, and that in few hours, unto the number of seven.[5] And in the like manner will toads also serve bees, and are accounted enemies unto their hives.[6]

7. Whether a lion be also afraid of a cock, as is related by many, and believed by most, were very easy in some places to make trial. Although how far they stand in fear of that animal we may sufficiently understand from what is delivered by Camerarius, whose words in his *Symbola* are these; *Nostris temporibus in aula serenissimi Principis Bavariæ, unus ex leonibus miris saltibus in vicinam cujusdam domus aream sese dimisit, ubi gallinaceorum cantum aut clamores nihil reformidans, ipsos, una cum pluribus gallinis devoravit.* That is, "in our time in the court of the Prince of Bavaria, one of the lions leaped down into a neighbour's yard, where, nothing regarding the crowing or noise of the cocks, he eat them up with many other, hens.[7]" And therefore a very unsafe defensative it is against the fury of this animal, (and surely no better than virginity or blood royal,) which Pliny * doth place in cock broth: for herein, saith he, whoever is anointed, (especially if garlick be boiled therein,) no lion or panther will touch him. But of an higher nature it were, and more exalted antipathy, if that were certain which Proclus delivers, that solary demons, and such as appear in the shape of lions, will disappear and vanish if a cock be presented upon them.[8]

8. It is generally conceived an ear-wig hath no wings, and is reckoned amongst impennous[9] insects by many: but he that

* *De sacrificiis et magia.*

[5] *seven.*] This is a remarkable experiment, whereon wee maye conclude against the old deception.—*Wr.*

Erasmus tells a ridiculous story of a monk found asleep on his back, with a toad squatted upon his mouth. The brethren carefully conveying the body, placed it immediately under the web of a spider, who instantly descended upon, and at length *slew* the toad, and delivered the monk from an ugly death.

[6] *hives.*] Which the bees (who of all creatures have the most accurate smell) soone perceive, and are poisoned with itt. That they never gather of more then one and the same flower in kinde, is manifest *ad oculum*: that by only flying swift by over many they discerne that one kind, are arguments of their exquisite smell.—*Wr.*

[7] *nothing regarding, &c.*] The learned and reverend Bishop Andrewes was desirous to try this upon a young lyon, to whome hee cast in a younge cock, whom (as he was crowing) the lyon seized on (as a cat on a mouse) and tare him and eate him up. Hee related this to mee for information against the fabulous conceyte, anno 1620, at his own table.—*Wr.*

Ross, rather than give up the old belief, accounts for the story told of the Prince of Bavaria's lion, by supposing it must have been mad! The bishop did not probably dream of such a solution.

[8] *But of an higher nature, &c.*] This sentence first added in 2nd edit.

[9] *impennous.*] Wingless.

shall narrowly observe them, or shall with a needle put aside the short and sheathy cases on their back, may extend and draw forth two wings of a proportionable length for flight, and larger than in many flies. The experiment of Pennius is yet more perfect, who with a brush or bristle so pricked them as to make them fly.

9. That worms are exsanguinous animals,[1] and such as have no blood at all, is the determination of philosophy, the general opinion of scholars, and I know not well how to dissent from thence myself. If so, surely we want a proper term whereby to express that humour in them which so strictly resembleth blood: and we refer it unto the discernment of others what to determine of that red and sanguinous humour, found more plentifully about the torquis or carneous circle of great worms in the spring, affording in linen or paper an indiscernable tincture from blood. Or wherein that differeth from a vein, which in an apparent blue runneth along the body, and if dextrously pricked with a lance emitteth a red drop, which pricked on either side, it will not readily afford.

In the upper parts of worms, there are likewise found certain white and oval glandulosities, which authors term eggs, and in magnifying glasses they also represent them; how properly, may also be enquired; since, if in them there be distinctions of sexes, these eggs are to be found in both. For in that which is presumed to be their coition, that is, their usual complication, or lateral adhesion above the ground, dividing suddenly[2] with two knives the adhering parts of both, I have found these eggs in either.

10. That flies, bees, &c. do make that noise or humming sound by their mouth, or as many believe, with their wings only, would be more warily asserted, if we consulted the

1 *That worms are, &c.*] They are not so. Sir Everard Home, in his 13th lecture on *Comparative Anatomy*, illustrated by the exquisite pencil of Bauer, shows that the earth-worm is provided with a central artery, with six bags or cells on each side, filled with red blood; thereby proving the accuracy of Sir Thomas's own examination.

2 *dividing.*] Itt seemes to have been in the very instant of coition, when the male emptyes himself of them, and was imparted before the full impletion of the female.—*Wr.*

The dean's remark proves him unacquainted with the mode of propagation in the worm. See Sir E. Home's 13th lecture.

determination of Aristotle, who as in sundry other places, so more expressly in his book of respiration, affirmeth this sound to be made by the illision of an inward spirit upon a pellicle or little membrane about the precinct or pectoral division of their body. If we also consider that a bee or fly, so it be able to move the body, will buzz, though its head be off; that it will do the like if deprived of wings,[3] reserving the head, whereby the body may be the better moved; and that some also which are big and lively will hum without either head or wing.

Nor is it only the beating upon this little membrane by the inward and connatural spirit, as Aristotle determines, or the outward air, as Scaliger conceiveth, which affordeth this humming noise, but most of the other parts may also concur hereto: as will be manifest, if while they hum we lay our finger on the back or other parts, for thereupon will be felt a serrous or jarring motion, like that which happeneth while we blow on the teeth of a comb through paper; and so, if the head or other parts of the trunk be touched with oil, the sound will be much impaired, if not destroyed; for those being also dry and membranous parts, by attrition of the spirit do help to advance the noise. And therefore also the sound is strongest in dry weather, and very weak in rainy seasons, and towards winter; for then the air is moist, and the inward spirit growing weak, makes a languid and dumb allision upon the parts.

11. There is found in the summer a kind of spider called a tainct, of a red colour, and so little of body that ten of the largest will hardly outweigh a grain; this by country people is accounted a deadly poison unto cows and horses; who, if they suddenly die, and swell thereon, ascribe their death hereto, and will commonly say, they have licked a tainct. Now to satisfy the doubts of men, we have called this tradition unto experiment; we have given hereof unto dogs, chickens, calves, and horses, and not in the singular number;

[3] *that it will do the like, &c.*] This is not accurate. Dr. Geer tried it and found the sound continued, when the stumps of the wings remained, whose vibration occasioned the sound: but it ceased when he perfected the experiment by entirely removing the wings.

yet never could find the least disturbance ensue. There must be therefore other causes enquired of the sudden death and swelling of cattle; and perhaps this insect is mistaken, and unjustly accused for some other. For some there are which from elder times have been observed pernicious unto cattle, as the *buprestis*, or burstcow, the *pityocampe* or *eruca pinuum*, by Dioscorides, Galen, and Ætius, the *staphilinus* described by Aristotle and others, or those red phalangious spiders like *cantharides*, mentioned by Muffetus. Now, although the animal may be mistaken, and the opinion also false, yet in the ground and reason which makes men most to doubt the verity hereof, there may be truth enough, that is, the inconsiderable quantity of this insect. For that a poison cannot destroy in so small a bulk, we have no reason to affirm. For if, as Leo Africanus reporteth, the tenth part of a grain of the poison of *nubia* * will dispatch a man in two hours; if the bite of a viper and sting of a scorpion is not conceived to impart so much; if the bite of an asp will kill within an hour, yet the impression scarce visible, and the poison communicated not ponderable; we cannot as impossible reject this way of destruction, or deny the power of death in so narrow a circumscription.

12. Wondrous things are promised from the glow-worm;[4] from thence perpetual lights are pretended, and waters said to be distilled which afford a lustre in the night; and this is asserted by Cardan, Albertus, Gaudentinus, Mizaldus, and many more. But hereto we cannot with reason assent: for the light made by this animal depends much upon its life. For when they are dead they shine not, nor always while they live; but are obscure or light, according to the protrusion of their luminous parts, as observation will instruct us. For this flammeous light is not over all the body, but only visible on the inward side, in a small white part near the tail. When this is full and seemeth protruded, there ariseth a flame of a

* *Granum Nubiæ.*

[4] *glow-worm.*] There is a glow-fly as well as a glow-worm. One of them flew about my face as I sate in my chamber at Bletchington, Oxon. Junio ineunte, 1650. See the particular narration in my notes on the *Lorde Verulam's Naturall Historye*, p. 180.—*Wr.*

The male glow-worm is winged.

circular figure and emerald green colour; which is discernable in any dark place in the day; but when it falleth and seemeth contracted, the light disappeareth, and the colour of the part only remaineth. Now this light, as it appeareth and disappeareth in their life, so doth it go quite out at their death. As we have observed in some, which preserved in fresh grass have lived and shined eighteen days: but as they declined, and the luminous humour dried, their light grew languid, and at last went out with their lives. Thus also the torpedo, which, alive, hath a power to stupify at a distance, hath none upon contraction being dead, as Galen and Rondeletius particularly experimented. And this hath also disappointed the mischief of those intentions, which study the advancement of poisons; and fancy destructive compositions from asp's or viper's teeth, from scorpion's or hornet's stings.[5] For these amit their efficacy in the death of the individual, and act but dependently on their forms. And thus far also those philosophers concur with us, which held the sun and stars were living creatures, for they conceived their lustre

[5] *and this hath also disappointed, &c.*] The sting being secured from the bodye of a waspe as itt hung on the finger, turnd itt selfe and rann (up to the roots) into the finger, and caused a very dolorous and greate impostume. And one was bit by the head of a snake, after 6 hours amputation whereof hee was never totally cured to his death: *me teste oculato.* Whether there may be destructive compositions made of those parts is uncertain: thus far itt is improbable; bycause the teeth of vipers and stings of scorpions are but the outward instrumentall partes through which the poysonous spirit of those venemous creatures is ejaculated by them while they live: but being dead, there is no such active quality in those parts more then anye other, and that the poyson consistes in the vital spirits is manifest, for that wee see the vipers drownd in a sack butt, infuse their spirit into the wine, making itt become an excellent antedote: the great quantitye of wine overcoming the small quantitye of the poyson which comes from them. The like may bee sayde of the vertue which together with the spirits of the scorpion, drownd in oyle, is imprinted on the oyle, makinge itt the only cure of the scorpion's stinge: whereof the reason is manifest. Oyle by nature, abates, and duls, and retundes the fiercenes and spreadinge of poyson injected into us by venemous creatures, where we may come to apply itt: but being dull of itt selfe, and not able to follow the swift spreading of the scorpions poyson, thro soe small a puncture, as soone as itt is felt, followes the poyson injected by the same waye; and soe making way for the oyle, wherein itt is caryed, caryes the balme that kils and deades the killing poyson before itt can seise on our vitall spirits to destroy them. And noe doubt but the oyle, wherein hornets are drowned, would cure their punctures alsoe; a thing worthe the tryall.—*Wr.*

It is not the case that the poison of serpents is only fatal when infused by the living reptile.—As is proved by the well-known fact that several individuals successively met their death by wearing a boot into the inside of which it was afterwards found the fang of a rattle snake had stuck fast, so as to wound the leg when drawn on.

depended on their lives, but if they ever died, their light must also perish.

It were a notable piece of art to translate the light from the Bononian stone into another body; he that would attempt to make a shining water from glow-worms, must make trial when the splendent part is fresh and turgid. For even from the great American glow worms, and flaming flies, the light declineth as the luminous humour drieth.[6]

Now whether the light of animals, which do not occasionally shine from contingent causes, be not of kin unto the light of heaven; whether the invisible flame of life received in a convenient matter, may not become visible, and the diffused æthereal light make little stars by conglobation in idoneous parts of the *compositum;* whether also it may not have some original in the seed and spirit analogous unto the element of stars, whereof some glimpse is observable on the little refulgent humour, at the first attempts of formation; philosophy may yet enquire.[7]

True it is, that a glow-worm will afford a faint light, almost a day's space, when many will conceive it dead; but this is a mistake in the compute of death, and term of disanimation; for indeed, it is not then dead, but if it be distended will slowly contract itself again, which when it cannot do, it ceaseth to shine any more. And to speak strictly, it is no easy matter to determine the point of death in insects and creatures who have not their vitalities radically confined unto one part; for they are not dead when they cease to move or afford the visible evidences of life; as may be observed in flies, who when they appear even desperate and quite forsaken of their forms, by virtue of the sun or warm ashes will be revoked unto life, and perform its functions again.

Now whether this lustre, awhile remaining after death, dependeth not still upon the first impression, and light communicated or raised from an inward spirit, subsisting awhile in a moist and apt recipient, nor long continuing in this, or the more remarkable Indian glow-worm; or whether it be of another nature, and proceedeth from different causes of illu-

[6] *It were a notable piece, &c.*] This paragraph was first added in 6th edition.

[7] *Now whether, &c.*] This paragraph was first added in 3rd edition.

mination; yet since it confessedly subsisteth so little awhile after their lives, how to make perpetual lights, and sublunary moons thereof as is pretended, we rationally doubt, though not so sharply deny, with Scaliger and Muffetus.[8]

13. The wisdom of the pismire is magnified by all, and in the panegyricks of their providence we always meet with this. That to prevent the growth of corn which they store up, they bite off the end thereof;[9] and some have conceived that from hence they have their name in Hebrew;* from whence ariseth a conceit that corn will not grow if the extremes

* *Namalh à Namal circumcidit.*

[8] *Now whether this lustre, &c.*] This paragraph was first added in 3rd. edit.

[9] *they bite off the end, &c.*] A more satisfactory and interesting solution of this question cannot be given, than is contained in the following quotation from one of the most interesting works on natural history in our language. "When we find the writers of all nations and ages unite in affirming, that, having deprived it of the power of vegetating, ants store up grain in their nests, we feel disposed to give larger credit to an assertion, which at first sight, seems to savour more of fact than of fable, and does not attribute more sagacity and foresight to these insects than in other instances they are found to possess. Writers in general, therefore, who have considered this subject, and some even of very late date, have taken it for granted that the ancients were correct in this notion. But when observers of nature began to examine the manners and economy of these creatures more narrowly, it was found, at least with respect to the European species of ants, that no such hoards of grain were made by them, and, in fact, that that they had no magazines in their nests in which provisions of any kind were stored up. It was therefore surmised that the ancients, observing them carry about their *pupæ*, which in shape, size, and colour, not a little resemble a grain of corn, and the ends of which they sometimes pull open to let out the inclosed insect, mistook the one for the other, and this action for depriving the grain of the *corculum*. Solomon's lesson to the sluggard has been generally adduced as a strong confirmation of the ancient opinion: it can, however, only relate to the species of a warm climate, the habits of which are probably different from those of a cold one;—so that his words, as commonly interpreted, may be perfectly correct and consistent with nature, and yet be not at all applicable to the species that are indigenous to Europe. But I think, if Solomon's words are properly considered, it will be found that this interpretation has been fathered upon them, rather than fairly deduced from them. He does not affirm that the ant which he proposes to his sluggard as an example, laid up in her magazines stores of grain: "go to the ant, thou sluggard, consider her ways and be wise; which having neither captain, overseer, or ruler, prepares her bread in the summer, and gathers her food in the harvest." These words may very well be interpreted simply to mean, that the ant, with commendable prudence and foresight, makes use of the proper seasons to collect a supply of provisions sufficient for her purposes. There is not a word in them implying that she stores up grain or other provision. She prepares her bread and gathers her food, —namely, such food as is suited to her—in summer and harvest,—that is, when it is most plentiful,—and thus shows her wisdom and prudence by using the advantages offered to her. The words thus interpreted, which they may be without any violence, will apply to our European species as well as to those that are not indigenous."—*Kirby and Spence, Introd. to Entomology.*—Vol. ii, p. 45-47.

be cut or broken. But herein we find no security to prevent its germination; as having made trials in grains, whose ends cut off have notwithstanding suddenly sprouted, and according to the law of their kinds; that is, the roots of barley and oats at contrary ends, of wheat and rye at the same. And therefore some have delivered that after rainy weather they dry these grains in the sun; which if effectual, we must conceive to be made in a high degree and above the progression of malt; for that malt will grow, this year hath informed us, and that unto a perfect ear.

And if that be true which is delivered by many, and we shall further experiment, that a decoction of toad-stools if poured upon earth, will produce the same again; if sow-thistles will abound in places manured with dung of hogs, which feed much upon that plant; if horse-dung reproduceth oats; if winds and rains will transport the seminals of plants; it will not be easy to determine where the power of generation ceaseth. The forms of things may lie deeper than we conceive them; seminal principles may not be dead in the divided atoms of plants; but wandering in the ocean of nature, when they hit upon proportionable materials, may unite and return to their visible selves again.

But the prudence of this animal is by gnawing, piercing, or otherwise, to destroy the little nib or principle of germination. Which, notwithstanding is not easily discoverable; it being no ready business to meet with such grains in ant-hills; and he must dig deep, that will seek them in the winter.[1]

[1] *and if that be true, &c.*] These 2 concluding paragraphs were first added in 3rd edit.

CHAPTER XXVIII.[2]

That the Chicken is made out of the yolk of the Egg; that Snakes sting; of the Tarantula; the Lamb of Tartary; the Swiftness of Tigers; with sundry queries.

THAT a chicken is formed out of the yolk of the egg, was the opinion of some ancient philosophers. Whether it be not the nutriment of the pullet may also be considered; since umbilical vessels are carried unto it; since much of the yolk remaineth after the chicken is formed; since in a chicken newly hatched the stomach is tinged yellow, and the belly full of yolk, which is drawn in at the naval or vessels towards the vent, as may be discerned in chickens within a day or two before exclusion.

Whether the chicken be made out of the white, or that be not also its aliment, is likewise very questionable; since an umbilical vessel is derived unto it; since after the formation and perfect shape of the chicken, much of the white remaineth.

Whether it be not made out of the *grando*, gallature, germ or tred of the egg, as Aquapendente informeth us, seemeth to many of doubt: for at the blunter end it is not discovered after the chicken is formed; by this also the yolk and white are continued, whereby it may continually receive its nutriment from them both.

Now, that from such slender materials nature should effect this production, it is no more than is observed in other animals; and, even in grains, and kernels, the greatest part is but the nutriment of that generative particle, so disproportionable unto it.

2 *chap.* xxviii.] This chapter was added in 2nd edition, except two paragraphs, one added in 3rd and the other in the 6th edition.

A greater difficulty, in the doctrine of eggs, is, how the sperm of the cock prolificates and makes the oval conception fruitful, or how it attaineth unto every egg, since the vitellary or place of the yolk is very high; since the ovary or part where the white involveth it, is in the second region of the matrix, which is somewhat long and inverted; since also a cock will in one day fertilate the whole racemation or cluster of eggs, which are not excluded in many weeks after.

But these at last, and how in the *cicatricula*, or little pale circle, formation first beginneth, how the *grando* or tredle are but the poles and establishing particles of the tender membranes, firmly conserving the floating parts in their proper places, with many other observables, that ocular philosopher and singular discloser of truth, Dr. Harvey, hath discovered in that excellent discourse of generation, so strongly erected upon the two great pillars of truth, experience and solid reason.[3]

That the sex is discernable from the figure of eggs, or that cocks or hens proceed from long or round ones, as many contend, experiment will easily frustrate.

The Egyptians observed a better way, to hatch their eggs in ovens, than the Babylonians, to roast them at the bottom of a sling, by swinging them round about till heat from motion had concocted them; for that confuseth all parts without any such effect.

Though slight distinction be made between boiled and roasted eggs, yet is there no slender difference, for the one is much drier than the other; the egg expiring less in the

[3] *But these at last, &c.*] The great principle of Harvey, "*omnia ex ovo*," has received splendid confirmation from the labours of Hunter, Malpighi, and Dutrochet, but still more from the recent investigations and discoveries of Sir E. Home, who has given, in his 14th lecture, a detailed account of the progressive changes of the egg during incubation; illustrated by exquisite microscopical figures. He has ascertained that the moleculi or *cicatricula*, exists both in mammalia and birds, and that in the latter it becomes, after impregnation, the embryo; which is nourished both by the yolk and the white. Sir Thomas seems, in one of his observations, to confound the *grandines*, or *chalazæ* (which are two knotty bodies, proceeding from the two ends of the yolk) with the *molecule*, a round milk-white spot on the surface of the yolk-bag, surrounded with white concentric circles. The fact which he notices of the whole cluster of eggs being fertilized at once, is a case somewhat analogous to that of quadrupeds which produce several young at a birth with one impregnation: the case of the *aphides* is still more remarkable, in which this is the fact not only with the eggs of the individual, but with those of its offspring to the ninth generation.

elixation or boiling; whereas in the assation or roasting it will sometimes abate a drachm, that is, threescore grains in weight. So a new laid egg will not so easily be boiled hard, because it contains a greater stock of humid parts, which must be evaporated before the heat can bring the inexhalable parts into consistence.[4]

Why the hen hatcheth not the egg in her belly, or maketh not at least some rudiment thereof within herself by the natural heat of inward parts, since the same is performed by incubation from an outward warmth after?[5] Why the egg is thinner at one extreme? Why there is some cavity or emptiness at the blunter end?[6] Why we open them at that part? Why the greater end is first excluded? Why some eggs are all red, as the kestrils; some only red at one end, as those of kites and buzzards? Why some eggs are not oval but round, as those of fishes, &c.—are problems whose decisions would too much enlarge this discourse.

That snakes and vipers do sting or transmit their mischief by the tail, is a common expression not easily to be justified, and a determination of their venoms unto a part, wherein we could never find it; the poison lying about the teeth, and communicated by bite, in such as are destructive. And therefore, when biting serpents are mentioned in the Scripture, they are not differentially set down from such as mischief by stings; nor can conclusions be made conformable to this opinion, because, when the rod of Moses was turned into a serpent, God determinatively commanded him to take up the same by the tail.

Nor are all snakes of such empoisoning qualities, as common opinion presumeth; as is confirmable from the ordinary

[4] *So a new-laid egg, &c.*] This is not the received theory of the coagulation of albumen. "Cohesive attraction is the real cause of the phœnomenon. In proportion as the temperature rises, the particles of water and albumen recede from each other, their affinity diminishes, and then the albumen precipitates. However, by uniting albumen with a large quantity of water, we diminish its coagulating property to such a degree, that heat renders the solution merely opalescent. A new-laid egg yields a soft coagulum by boiling; but when, by keeping, a portion of the water has transuded so as to leave a void space within the shell, the concentrated albumen affords a firm coagulum."—*Ure.*

[5] *Why the hen, &c.*] She does "make some rudiment," viz. the molecule, which however, without impregnation, would not become a chick by the process of incubation.

[6] *Why there is some cavity, &c.*] It contains air, by which, in the earlier stages, the blood of the chick is aerated.

green snake with us, from several histories of domestic snakes, from ophiophagous nations, and such as feed upon serpents.[7]

Surely the destructive delusion, of Satan in this shape, hath much enlarged the opinion of their mischief. Which, notwithstanding, was not so high with the heathens, in whom the devil had wrought a better opinion of this animal, it being sacred unto the Egyptians, Greeks, and Romans, and the common symbol of sanity. In the shape whereof, Æsculapius, the god of health, appeared unto the Romans, accompanied their embassadors to Rome from Epidaurus, and the same did stand in the Tiberine isle upon the temple of Æsculapius.

Some doubt many have of the *tarantula*, or poisonous spider of Calabria, and that magical cure of the bite thereof by music. But since we observe that many attest it from experience; since the learned Kircherus hath positively averred it, and set down the songs and tunes solemnly used for it; since some also affirm the *tarantula* itself will dance upon certain strokes, whereby they set their instruments against its poison, we shall not at all question it.[8]

Much wonder is made of the *borametz*,[9] that strange plant-animal or vegetable lamb of Tartary, which wolves delight to feed on, which hath the shape of a lamb, affordeth a bloody juice upon breaking, and liveth while the plants be consumed

[7] *from ophiophagous, &c.*] But the venomous serpents are eaten as well as the harmless:—indeed the poison itself may be swallowed with impunity. Its fatality is evolved only on its entering into the circulation through a wound.

[8] *Some doubt many have, &c.*] The effects ascribed to its wounds, and their wonderful cures have long been celebrated: but after all there seems to have been more of fraud than of truth in the business; and the whole evil appears to consist in swelling and inflammation. Dr. Clavitio submitted to be bitten by this animal, and no bad effects ensued; and the Count de Borch, a Polish nobleman, bribed a man to undergo the same experiment, in whom the only result was a swelling in the hand, attended by intolerable itching. The fellow's sole remedy was a bottle of wine, which charmed away all his pain, without the aid of pipe and tabor."—*K. and Sp.* i, 128.

[9] *the borametz.*] *Polypodium borametz*, L. Mirbel (in the 8vo. edition of *Buffon*, by Sonnini) calls it *polyp. chinois*. Jussieu gives the following account of it under the article, BAROMETZ.

"Cette espèce de polypode de Tartarie, *polypodium borametz*, L., présente dans la disposition de ses parties une forme singulère. Sa tige, longue d'environ un pied et dans une direction horizontale, est portée sur quatre ou cinq racines qui la tiennent élevée hors de terre. Sa surface est couverte d'un duvet assez long, soyeux et d'une couleur jaune dorée. Ainsi conformée, elle ressemble à la toison d'un agneau de Scythie, et on la trouve ainsi citée dans les contes fabuleux imaginés sur quelques singularités du règne végétal.—*Dictionnaire des Sciences Naturelles*, vol. iv, p. 85.

Ross contends stoutly for the literal verity of this pleasant story; and utterly rejects the sceptical explanations proposed by Sir Thomas. See p. 143.

about it. And yet if all this be no more, than the shape of a lamb in the flower or seed, upon the top of the stalk, as we meet with the forms of bees, flies and dogs in some others; he hath seen nothing that shall much wonder at it.

It may seem too hard to question the swiftness of tigers, which hath therefore given names unto horses, ships and rivers, nor can we deny what all have thus affirmed; yet cannot but observe, that Jacobus Bontius late physician at Java in the East Indies, as an ocular and frequent witness, is not afraid to deny it; to condemn Pliny who affirmeth it; and that indeed it is but a slow and tardigradous animal, preying upon advantage, and otherwise may be escaped.

Many more there are whose serious enquiries we must request of others, and shall only awake considerations, whether that common opinion that snakes do breed out of the back or spinal marrow of man, doth build upon any constant root or seed in nature; or did not arise from contingent generation, in some single bodies remembered by Pliny or others, and might be paralleled since in living corruptions of the guts and other parts; which regularly proceed not to putrefactions of that nature.

Whether the story of the remora be not unreasonably amplified;[1] whether that of bernacles and goose-trees be not too much enlarged;[2] whether the common history of bees will hold, as large accounts have delivered; whether the brains of cats be attended with such destructive malignities, as Dioscorides and others put upon them?

As also whether there be not some additional help of art, unto the numismatical and musical shells, which we sometimes meet with in conchylious collections among us?

Whether the fasting spittle of man be poison unto snakes and vipers, as experience hath made us doubt? Whether the nightingale's sitting with her breast against a thorn, be any

[1] *too much enlarged.*] The natural history of the *lepas anatifera*, or bernacle, is too well understood, to render it necessary to say a syllable in refutation of the old story of its producing geese. It may be allowed, however, to notice the fact (discovered by Sir E. Home, and illustrated by highly magnified figures in his *Comparative Anatomy*) that this is one of the self-impregnating animals.

[2] *amplified.*] Alluding probably to the absurd story of a vessel in full sail being stopt by one of these singular little fishes adhering to it.

more than that she placeth some prickles on the outside of her nest, or roosteth in thorny prickly places, where serpents may least approach her? Whether mice[3] may be bred by putrefaction as well as univocal production, as may be easily believed, if that receipt to make mice out of wheat will hold, which Helmont* hath delivered. Whether quails from any idiosyncracy or peculiarity of constitution, do innocuously feed upon hellebore, or rather sometime but medically use the same; because we perceive that stares, which are commonly said harmlessly to feed on hemlock, do not make good the tradition; and he that observes what vertigoes, cramps and convulsions follow thereon in these animals, will be of our belief.

* *Helm. Imago Fermenti, &c.*

[3] *Whether mice, &c.*] Ross's note on this doubt cannot be omitted. "So he may doubt whether in cheese and timber, worms are generated; or if beetles and wasps in cow's dung; or if butterflies, locusts, grasshoppers, shell-fish, snails, eels, and such like, be procreated of putrified matters, which is apt to receive the form of that creature to which it is by formative power disposed. To question this, is to question reason, sense, and experience. If he doubts of this, let him go to Egypt, and there he will find the fields swarming with mice begot of the mud of Nylus, to the great calamity of the inhabitants. What will he say to those rats and mice, or little beasts resembling mice found generated in the belly of a woman dissected after her death, of which Lemnius is a witness? I have seen one whose belly, by drinking of puddle water, was swelled to a vast capacity, being full of small toads, frogs, evets [water lizards,] and such vermin, usually bred in putrified water." p. 155.

END OF VOL. II.

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